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HAY FEVER

AND

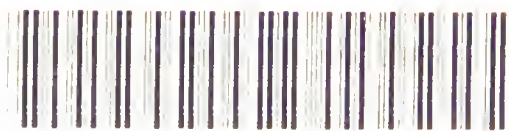
PAROXYSMAL SNEEZING

BY

MORELL MACKENZIE, M.D.

M20217

FOURTH EDITION



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The Frontispiece (opposite) is an illustration of some of the Grasses the pollen of which is most productive of Hay Fever in this country:—

- No. 1. Sweet-scented vernal grass (*Anthoxanthum odoratum*).
2. Oat-like soft grass (*Holcus avenaceus*).
3. Fertile meadow grass (*Poa fertilis*).
4. Meadow fox-tail (*Alopecurus pratensis*).
5. Rough-stalked meadow grass (*Poa trivialis*).
6. Wood meadow grass (*Poa nemoralis*).
7. Perennial rye (*Lolium perenne*).

HAY FEVER.

Opinions of the Press on previous Editions.

"This is a condensed, but very complete, account of a most interesting pathological condition, the subject being treated with that conscientious thoroughness which distinguishes all Dr. Mackenzie's literary work."—*Medical Times and Gazette*.

"We have here put together in a concise and most interesting form all that is known of the disease up to the present, and we strongly recommend it to those who take an interest in this affection, whether personally or professionally."—*Medical Press and Circular*.

"Those who are interested in the subject of hay fever will find in this little pamphlet a brief but comprehensive account of all that is known about it. . . . To the general practitioner, who must often be at a loss in dealing with cases of this kind, the present communication (coming as it does from one of the highest authorities) is likely to prove highly serviceable, and we have pleasure in recommending it."—*Glasgow Medical Journal*.

"The learned author, moreover, gives evidence of no mean literary skill, and writes with a 'lucidity' that should delight the heart of Mr. Matthew Arnold."—*Sunday Times*.

"Nous recommandons la lecture de la brochure de M. Morell Mackenzie, qui est agréable et instructive."—*Union Médicale*.

"In dieser Broschüre giebt uns Dr. Morell Mackenzie, der ausgezeichnete englische Specialist für die Krankheiten der Athmungsorgane, einen vollständigen und klaren Bericht über Heufieber."—*Wiener Medizinische Zeitung*.

Ernest Hart Esq.
with the Compliments of
the Author.



HAY FEVER

AND

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by Ernest Hart

PAROXYSMAL SNEEZING

Their Etiology and Treatment

WITH

AN APPENDIX ON ROSE COLD

BY

MORELL MACKENZIE, M.D. LOND.

CONSULTING PHYSICIAN TO THE THROAT HOSPITAL, AND LATELY
PHYSICIAN TO THE LONDON HOSPITAL.

FOURTH



EDITION

London

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PREFACE TO THE FOURTH EDITION.

IN presenting the fourth edition of this book to the public, a few words as to the points of difference between it and its predecessors may not be out of place. Considerable new matter has been introduced here and there in the text, the most notable addition being an account of some experiments made by me the year before last to determine the relative quantity of pollen floating free in the air on each day throughout the Hay Fever season, and the atmospheric conditions influencing the amount. The part of my essay dealing with the all-important subject of treatment has also been much enlarged—an increase in size which, I am happy to say, represents a corresponding expansion in the therapeutic resources now at our disposal in combating the disease. The introduction of cocaine has been a vast benefit, both to Hay Fever sufferers and to those who are called on to do something for their relief. It is not only a remedy in itself, but it enables us in some cases to use various curative measures of a surgical, or at least mechanical, character. I am now able, therefore, to speak much more hopefully about the treatment of this troublesome complaint than when the present work first appeared.

I have added an essay on “Paroxysmal Sneezing,” which I venture to think may prove interesting as a minor pathological curiosity.

M. M.

May, 1887.

PREFACE TO THE THIRD EDITION.

THE following short essay appeared last year as a reprint, from the *British Medical Journal*, of a lecture delivered at the London Hospital Medical College. A good deal of new matter has been added, more especially with regard to certain views recently propounded by American physicians, which differ fundamentally from those hitherto current as to the origin of Hay Fever. From the important bearing of those theories on the treatment of a complaint which has always proved so rebellious to therapeutic measures, they deserve attentive examination, and I have, therefore, discussed them in considerable detail. Another new feature in the present issue is an Appendix on Rose Cold—an interesting affection which bears a family likeness to Hay Fever, but is much less frequently met with.

If owing to these additions the little work has lost something of its popular character, I venture to hope that its scientific value has been materially increased.

M. M.

May, 1885.

PREFACE TO THE SECOND EDITION.

A FIRST edition (of one thousand copies) of this little essay having been rapidly exhausted, I have availed myself in this issue of the opportunity of replacing some sentences which formed part of the text of my lecture as delivered, but which were omitted in the original report owing to want of space.

19, HARLEY STREET,
July, 1884.

INTRODUCTION.

AMONG the minor ills that flesh is heir to, a prominent place must be assigned to the curious infirmity discussed in this little work. This country may be said to be the birth-place of the disease, though America is perhaps more particularly its chosen home, but it follows our wandering race all over the world. Not that other nations are entirely exempt; scattered instances are met with among Frenchmen, Germans, and others, but, hitherto at least, in such comparatively scanty numbers, as to be no more than exceptions proving the rule. As we shall see presently, this fact, which may at first sight seem somewhat humiliating, in reality affords matter for self-congratulation as indicating our superiority to less favoured peoples in culture and civilisation.

Probably the "gentle reader" hardly needs to be informed as to the general symptoms of the malady, for he may have acquired this knowledge in an unpleasantly practical way, or he may have witnessed the sufferings or heard the complaints of less fortunate neighbours. The cause of the disease was for a long time a mystery, and, as usual, all kinds of wild guesses were made. Recent investigations have, however, pretty conclusively shown that the *fons et origo mali* lies in the entrance into the eyes and air-channels of those *predisposed to the ailment*, of minute particles of vegetable matter from grasses and plants in flower. Great irritation is set up in these delicate parts, followed by the familiar train of disagreeable phenomena. This, then, is the secret of hay fever, or rather the outer husk of it; for the kernel

of the matter, *i.e.*, the nature and conditions of the necessary "predisposition" have not yet been reached. We explain it by the help of "that blessed word" *idiosyncrasy*, which reminds us of the *virtus dormitiva* whereby *opium facit dormire*, but when we have called it an "idiosyncrasy," how much nearer are we to a solution of the riddle? Nevertheless, the discovery of the proximate cause of the evil has this immense practical advantage that the exact source of danger being known, it can be avoided.

Like sea-sickness, hay fever too often excites ridicule rather than sympathy—a proof that Hobbes's definition of laughter, ill-natured as it sounds, has in it some element of truth. Yet the distress, trivial though it may appear to those who are free from it, is very real, and it is not strange that during the hay-season melancholy seems to have marked the sufferer for her own. What, indeed, is more likely to make a man curse his fate than the thought that when every one else is rejoicing in the beauty and brightness of the summer, he should have to shun the light and close his nostrils to the perfume of the flowers; that a rose should be to him as sure and subtle, if not quite so deadly, a poison, as if it came from the garden of a Borgia?

Sufferers from hay fever may, however, gather some crumbs of comfort from the fact that the disease is almost exclusively confined to persons of cultivation. As, therefore, summer sneezing goes hand-in-hand with culture, we may, perhaps, infer that the higher we rise in the intellectual scale, the more is the tendency developed. Hence, as already hinted, our national proclivity to hay fever may be taken as a proof of our superiority to other races. The male sex is more liable than the female in the ratio of about three to one,—a fact which, coupled with what has just been said, may be commended to the earnest attention of the advocates of the equality of the sexes. When this idea of the intimate connexion between hay fever and culture has been firmly grasped by the public

mind, the complaint will, perhaps, come to be looked on, like gout, as a sign of breeding ; it will be assumed by those who have it not, like Louis the Fourteenth's courtiers, who submitted their sound flesh to the surgeon's knife, in pious imitation of their majestic but diseased master ; soon, no doubt, the presence or absence of the tendency to sneeze at the sight of a rose will become a test, surer than the letter *h* for the separation of the elect from the common herd.

To speak more seriously, however, the prospect opened up by modern observations is rather alarming. It is now clearly shown that hay fever is of quite recent growth, and it is doubtless one of the earliest products of the plague of "nerves" which seems to have fallen on this century. As civilisation and culture advance, other diseases analogous to the one discussed in the following pages may be developed from over-sensitiveness to sound, colour or form, and the man of the twenty-first or twenty-second century may be a being of pure intellect, whose organisation of pure nervous pulp would be shattered by a strong emotion, like a pumpkin filled with dynamite. Perhaps, however, in that dreary time of omniscience to which we are said to be hastening, when machinery shall have taken the place of nature, and nothing is left to remind the world of flowers but dried specimens in botanical museums, the disease will become extinct equally with its cause. At the present time we are fortunately still far removed from this consummation, and the human, or at any rate the Anglo-Saxon, race, is warmly interested in devising means of curing the disease.

It is gratifying to think that since the lecture on which this little book is based was delivered at the London Hospital Medical College three years ago, and partly, perhaps, owing to the widespread interest which it excited, much progress has been made, and hay fever can now no longer be looked upon as an *opprobrium medicinæ*.

HAY FEVER.

HAY FEVER, though not dangerous to life, causes at certain times such extreme discomfort to some of its victims as to make them quite unfit for their ordinary pursuits; many others, without being actually disabled, are rendered utterly miserable during the most agreeable season of the year. Under these circumstances, an attempt to elucidate the nature of so troublesome a malady would seem to be highly desirable.

The affection has received various names,¹ such as Hay Asthma, Pollen Catarrh, Summer Catarrh, Rose Cold, Peach Cold, and Idiosyncratic Catarrh, according as the most prominent symptom, or the supposed cause in a particular case, has been made the basis of nomenclature; I have thought it convenient to make use of the one most commonly employed in this country.

The disease may be defined to be a *peculiar affection of the mucous membrane of the eyes, nose, and air-passages, giving rise to catarrh and asthma, almost invariably caused by the action of the pollen of grasses and flowers, and therefore prevalent only when they are in blossom.*

¹ Dr. Gueneau de Mussy ("Gaz. Hebdom.," January 5, 1872), proposed to call the affection *Spasmodic rhino-bronchitis*; and it has occurred to Dr. Elias J. Marsh, of Paterson, New Jersey, that it might appropriately be described as *Catarrhus venenatus*. Dr. Bosworth, of New York, at the meeting of the American Laryngological Association, in May, 1884, suggested the name *Rhinitis vaso-motoria*, which my distinguished pupil, Dr. J. N. Mackenzie, of Baltimore ("Maryland Med. Journ.," June 21, 1884), amplified into *Coryza vaso-motoria periodica*. Dr. Herzog ("Mittheil. d. Ver. d. Aerzte in Steiermark." [Reprint, Wien, 1882]), had already proposed the term *Rhinitis vaso-motoria* for nervous sneezing. Dr. J. N. Mackenzie now calls the complaint *Coryza sympathetica*. Great practical inconvenience, however, will result if every writer on the subject insists on substituting a term of his own devising for the familiar and generally recognised name.

The *history* of the affection is interesting in many respects, and appears to show either that the complaint, like influenza and cholera, did not occur in Europe in the "good old times," or that it was entirely overlooked till a comparatively recent period.

The circumstance, already referred to, that the disease does not actually kill, and the resemblance of its different forms to some other complaints, tend to support the view that the older physicians may not have observed this transitory affection; but, on the other hand, the fact that it has certainly become more common in the last few years would seem to prove either that irritating properties have been newly acquired by certain vegetable bodies,¹ or that the wear and tear of the so-called "higher civilisation" of modern life has led to the more frequent development of the nervous temperament, resulting in a peculiar idiosyncrasy, which renders us vulnerable in a new way.

But, though the older physicians did not recognise a specific complaint affecting numbers of people during a certain season, many isolated examples are recorded of persons who suffered from catarrh or asthma in the presence of roses.²

As early as the year 1802, Heberden³ had noticed that

¹ When it is remembered that new forms of *animal* life suddenly arise, become widely diffused, and then entirely disappear, it is certainly by no means improbable that vegetable matter may acquire new properties. No trace remains of the beetle which suddenly appeared in Colorado a few years since, and by its spread through America caused such wide devastation of the potato-root. Other pests, however, have not been so obliging. In the case of vegetables, new forms of blight have appeared from time to time which have caused widespread destruction among vines, hops, roses, and other plants.

² See Appendix on Rose Cold, p. 83.

³ "Commentarii de Morborum Historiâ et Curatione," p. 118 *et seq.* cap. 24. Londini, 1802. It is to be noted that Heberden is speaking expressly of *chronic* catarrh, and there is nothing in his words to show that he even dimly recognised the characteristic group of phenomena to which the name "hay fever" is now generally attached. From the context it is evident that the examples of summer cold to which he refers had no special significance for him beyond other varieties which he mentions, such as catarrh recurring every night, or at longer intervals;

catarrh was sometimes periodic, occurring, in certain cases, every summer for a month, and occasionally lasting throughout the whole of that season. The first detailed account of hay fever was given by Bostock,¹ who, in 1819, described a "periodical affection of the eyes and chest," from which he was himself a sufferer. In 1828,² this physician published some further observations of the complaint, under the name of "summer catarrh"; in the same year, MacCulloch³ speaks of it as a "well-known disorder," and mentions that the term Hay Fever had lately become fashionable. A short paper on "Hay Asthma," by Gordon,⁴ appeared in 1829, and, in 1831, Elliotson⁵ gave a brief description of the complaint. A few years later, the same physician⁶ discussed the subject more fully, and mentioned that a patient had suggested to him that pollen was the probable cause of the affection.

In 1837 a case was described by J. J. Cazenave,⁷ of Bordeaux, which in its essential features resembled "hay fever" as we now know it. Cazenave recommended his patient to wear "goggles," being so far as I know the first to propose this means of protection. He also attempted to prepare the nasal mucous membrane for the enemy's attack by *hardening* it with nitrate of silver. Cazenave attributed the complaint to the effect of

or catarrh continuing through every season of the year *except* the summer. The following is the whole passage in the original Latin: "Interdum tamen fit morbus [sc. catarrhus] longus et paucis intermissionibus perseverat, modo aliquot menses, modo annos quatuor; modo redit singulis noctibus per decennium, modo bis in mense per multos annos. *Quinque ægris contigit graviter laborare hoc morbo per mensem omni æstate, alium totam æstatem afflixit quotannis; alius nunquam nisi æstate ab eo liber.*"

¹ "Med.-Chir. Trans.," vol. x. pt. i. p. 161 *et seq.* London, 1819.

² Ibid., vol. xiv. pt. ii. p. 437 *et seq.*

³ "Remittent and Intermittent Diseases," vol. i. p. 394. London, 1828.

⁴ "London Med. Gazette," vol. iv. p. 266. 1829.

⁵ Ibid., vol. viii. p. 411 *et seq.* 1831.

⁶ "Lectures on the Theory and Practice of Medicine," pp. 516-527. London, 1839.

⁷ "Gazette Médicale," 1837, p. 631.

light, and does not seem to have known that it had been described before.

In 1852 Swell,¹ of New York, described the disease as it is met with on the other side of the Atlantic, being apparently unaware that the complaint had been observed before. He was the first to distinguish the two varieties which occur in America in the summer and autumn respectively. A typical example of the asthmatic form occurring in America in the autumn was recorded by Drake in 1854.² Scattered cases were reported by American physicians within the next few years.³

In 1859 Laforgue,⁴ of Toulouse, described two cases which he had met with. Both the patients were women, and he was led to regard the disease as neurotic in its origin and as being directly excited by heat. In 1860 an interesting case was reported by an anonymous French writer.⁵ The patient had tried all sorts of remedies to no purpose till he fell in with an Englishman (not a medical man), who enlightened him as to the true nature of his ailment. After that he was able to get through the summer in comfort by avoiding the cause of his suffering. In the same year Dechambre⁶ reported two cases, one of them in a landscape-painter, surely a most unlucky subject for hay fever. Dechambre was of opinion that some "occult atmospheric influence" was the cause of the disease. Hervier,⁷ who also believed in the meteorological origin of the complaint, related three cases soon afterwards.

A systematic inquiry into all the circumstances of the

¹ "Treatise on Diseases of the Chest," New York, 1852.

² "Principal Diseases of the Interior Valley of North America," 1854, p. 803.

³ Kinkler, Darrach, and Price,—quoted by Marsh: "Hay Fever, or Pollen Poisoning." Newark, N. J., 1877, p. 4.

⁴ "Union Médicale," December 17, 1859.

⁵ "Abeille Médicale," January 30, 1860.

⁶ "Gazette Hebdomadaire," 1860, p. 67.

⁷ Ibid. p. 169.

disease was made in 1862 by Phœbus,¹ of Giessen, whose own personal observation was, however, confined to a single case. Unlike most of the other writers upon the subject, moreover, he did not himself suffer from the complaint. His method consisted in issuing circulars and advertisements, inviting medical men all over the world to send him answers to a series of questions so framed as to embrace every possible kind of information about the causes, symptoms, and progress of the disorder ; its periods of prevalence ; its geographical and ethnological distribution ; and its prevention and treatment. In this manner a vast quantity of facts and observations was collected,² and from these Phœbus endeavoured to extract a complete theory of the disease. During the ensuing ten years pamphlets on hay fever were published by Abbott Smith,³ Pirrie,⁴ and Moore,⁵ dealing with the disorder from various points of view, but all, more or less, showing a disposition to limit the cause of its development to emanations from plants.

In 1869 a theory of hay fever was propounded by Helmholtz,⁶ who was himself a sufferer from the complaint. He held that the symptoms were produced by vibrios (see p. 50), which, although existing in the nasal fossæ and sinuses at other times, were excited to activity only by summer heat. He professed to have found a ready means of relief and even of prevention, in the injection of quinine, which Binz had shortly before shown to be poisonous to infusoria. Subsequent experience has not confirmed Helmholtz's conclusions. In the following year a short paper was written by Roberts,⁷ in which he claimed to have been the first to

¹ "Der typische Frühsommer-Katarrh." Giessen, 1862.

² It was in reply to this appeal that all the cases reported by the French writers just mentioned, except Cazenave, were published.

³ "Observations on Hay Fever." London, 1865, 2nd ed.

⁴ "Hay Asthma." London, 1867.

⁵ "Hay Fever." London, 1869.

⁶ Binz: "Virchow's Archiv." February, 1869.

⁷ "New York Med. Gaz." Oct. 8, 1870.

observe that excessive coldness of the tip of the nose is "*the* pathognomonic" symptom of hay fever, and desired to have due credit awarded to him for this remarkable discovery!

In 1872 Dr. Morrill Wyman, who had described the disease in his lectures at Harvard in 1854,¹ published a monograph² in which he conclusively established that there were two distinct forms of hay fever in America—one occurring in May and June and corresponding to English hay fever, and a later variety peculiar to America, which he called "Autumnal Catarrh." In the same year Dr. Gueneau de Mussy published a somewhat elaborate account of hay fever under the name of *rhino-bronchite spasmodique*.³ He thinks that it is nearly always connected with a gouty diathesis,⁴ and compares it to certain gouty eruptions on the skin. He points out that gout, urticaria, asthma, and hay fever are often found in the same family, though not all, perhaps, existing in every member of it. These conditions may also alternate with each other in the same individual. Granular pharynx or some local congestion in the upper air-passages is often, according to him, a focus from which the disease may radiate to other parts.

In 1873 Dr. Blackley,⁵ of Manchester, produced a work which is a model of scientific investigation. By a most ingenious and carefully-conducted series of experiments he proved that, in his own person at least, the pollen of grasses and flowers was the sole cause of hay fever, and that in the case of two other patients the severity of the disease bore a direct relation to the amount of pollen in the air. His subsequent observations make it extremely probable, indeed almost

¹ Quoted by Marsh, *op. cit.* p. 4.

² "Autumnal Catarrh." New York, 1872.

³ "Gazette Hebdomadaire." 1872, p. 9.

⁴ Dr. J. J. Merriman, himself a martyr to the complaint, says, in speaking of his own case (private letter, dated 18 June, 1885), "We were a family of eight; it affected us alternately, independently of sex; and we inherit gout from my father and grandfather. I think I trace it more in gouty families."

"Hay Fever." London, 1873, and 2nd ed. 1880.

certain, that though transient irritation of the mucous membrane may occasionally be caused by simple dust, pollen is in fact the true *materies morbi* of summer catarrh. In 1876 a short treatise was published by the late Dr. Beard,¹ of New York, in which he dealt with the complaint as it is met with in the United States. His information was collected chiefly by circulars after the manner of Phœbus; but, more fortunate than the German inquirer, Beard had himself seen and treated many cases. He received replies from over two hundred patients, and on these data he came to the conclusion that the immediate exciting causes are more than thirty in number, and that further investigations may extend the number of secondary causes to fifty or even a hundred. Beard showed clearly from his statistics that a large proportion of the sufferers are of nervous temperament, and that nerve-tonics are of considerable value in the treatment of the affection.

In 1877 an important essay appeared from the pen of Dr. Marsh,² in which, whilst accepting the pollen theory in general, he endeavoured to prove that in America the pollen of the Roman wormwood was the only one which excited the complaint. Marsh also made some interesting comparisons between the effects of the *Rhus toxicodendron* on the skin, and those of pollen on the mucous membrane.

In the year 1882 an entirely new doctrine was put forward. Ignoring external or atmospheric causes, Dr. Daly,³ of Pittsburg, maintained that the etiology of the complaint was to be found in the intrinsic conditions of the nose, and he reported three cases of hay fever which had been cured by surgical treatment. He has since been followed, though with some differences of opinion, in the same line,

¹ "Hay Fever, or Summer Catarrh." New York, 1876.

² "Hay Fever, or Pollen-poisoning." Read before the New Jersey State Medical Society, 1877; reprinted from the Transactions of the Society. Newark, N.J., 1877.

³ "Archives of Laryngology," vol. iil. p. 157. 1882.

by Dr. Roe,¹ Professor Hack,² Dr. Harrison Allen,³ and Dr. J. N. Mackenzie.⁴ The views of these practitioners will be considered in detail further on; but it may be stated here, in general terms, that the doctrine that hay fever depends on chronic disease of the nose is open to the following fundamental objections, (*a*) that only an insignificant proportion of the many sufferers from nasal disease are affected by the pollen of plants; (*b*) that in many of the worst cases of hay fever there is absolutely no evidence, objective or subjective, of disease within the nose; (*c*) that the pathological theory entirely ignores the racial limitation of the disease; (*d*) that the new doctrine altogether fails to account for the limitation of the complaint to one, or at most two, brief seasons of the year, a circumstance which of itself marks off hay fever by a "scientific frontier" from the whole motley host of ailments which, according to the teaching at present fashionable in certain quarters, take origin from a disordered nose. This limitation is so evident that even the literature of the disease participates in it and bursts into bloom yearly with the flowers and grasses, fading away again with them and dying with the "last rose of summer," or its American equivalent in the "fall."

Dr. Sajous,⁵ though agreeing in practice with the writers just mentioned, differs from them in theory, inasmuch as he fully accepts the doctrine that hay fever is caused by pollen acting on a specially sensitive mucous membrane. He claims to cure the disease by destroying the "sensibility of the parts to the foreign elements which excite" it. One of the cases which he relates is in itself a refutation of the view

¹ "Pathology and Radical Cure of Hay Fever." New York, 1883, and "Second Article" reprinted from the New York Medical Journal. Appleton, New York, 1884.

² "Wien. Med. Woehenschrift." 1882-83.

³ "American Jour. Med. Sci." Jan. 1884.

⁴ "N.Y. Med. Record." July 19 and Oct. 18, 1884. Dr. Fletcher Ingalls ("Chicago Medical Journal and Examiner," 1885) also supports the pathological theory.

⁵ "Med and Surg. Reporter." Dec. 22, 1883.

which attributes all the mischief to the nose. By surgical treatment applied to the nose a lady was rendered invulnerable as far as that organ was concerned, but the idiosyncrasy still remained in force in her eyes which had not been treated.

An excellent account of hay fever, with a very accurate bibliography of the disease, has appeared since the publication of the last edition of this work, from the pen of Dr. Oscar Beschorner, of Dresden.¹ The subject matter was originally delivered as a lecture before the "Society of Naturalists and Physicians" at Dresden, in November, 1885. The author considers that "the basis of the disease is an inherited or acquired nervous and idiosyncratic disposition in relation to certain emanations from plants, the outbreak of the attack being favoured, if not directly caused, in the greatest number of cases by morbid conditions of the nose."

In accordance with the usual method of dealing with *etiology*, the causes of hay fever may be conveniently divided into the predisposing and the exciting.

The predisposing cause of the complaint is the possession of a peculiar idiosyncrasy, but on what that idiosyncrasy depends is quite unknown. Indeed, it would cease to be an idiosyncrasy if a satisfactory explanation could be given. Whether it is due to some local abnormality affecting the structure of the mucous membrane, the capillaries, or the periphery of the nerves, but of too delicate a nature to admit of detection by available methods of research, cannot be determined. Among the sufferers one may here and there be found who is affected with chronic disease of the nose, but most of them appear to be perfectly healthy as regards that organ, except during the short period when they are attacked by hay fever. Whilst millions of people are exposed to the cause of the affection, very few actually suffer from it. The idiosyncrasy is not, as a rule, congenital, like most others, but in most cases is suddenly developed without apparent

¹ "Heu-Fieber." Dresden: Blockmann und Sohn. 1886.

reason. Once acquired, however, it is seldom lost, the predisposition, on the contrary, seeming rather to increase with each recurring summer.

The idea that idiosyncrasy has anything to do with hay fever has been so violently assailed since this little treatise was first published, that it has become necessary to make a few remarks on this subject. The term idiosyncrasy has been described as a mere *asylum ignorantie*, but it seems to me, on the contrary, to be a convenient denomination for obscure groups of phenomena, the causation of which is unknown.

If pressed for a definition, I should say that idiosyncrasy may be looked upon as an exceptional state of the constitution¹ shown in a few persons by a peculiar sensibility, not possessed by the bulk of mankind, to certain agents, which manifests itself by certain definite phenomena. One of the most familiar forms of idiosyncrasy is that shown by people who cannot eat crab-fish without suffering from nettle-rash. In this case a few persons (that is, few in proportion to the mass of mankind) show a peculiar susceptibility to something contained within the flesh of the crab, whilst the eruption constitutes the definite phenomenon. No explanation of this train of symptoms has ever been given. Is it due to a peculiar condition of the nerves of the stomach, or to some exceptional quality of the blood in the vessels of that organ? It is impossible to answer this question. Whilst crab is the shell-fish which most frequently gives rise to urticaria, the lobster produces it in a smaller number of people, and the oyster in a lesser number still. It is very strange, too, that with some persons so different an article of diet as fruit should be capable of producing the same rash, but it is well known that strawberries have this effect. Again, in the case of certain

¹ I do not consider that the perverted taste, or the unreasonable cravings resulting from a diseased condition or a physiological process, ought to be considered as idiosyncrasies.

individuals, eggs invariably cause sickness or even symptoms of actual poisoning;¹ and there are several other idiosyncrasies equally well known.

It would be easy for anyone with sufficient leisure for such an inquiry to fill a goodly volume with well-authenticated cases of remarkable idiosyncrasy. A few will suffice to give an idea of the vast variety of individual peculiarities of this sort. Thus we find persons strangely affected by vegetable substances, such as plants, flowers, and fruits of different kinds. Scaliger tells of a girl who fainted at the sight of *lilies*, and who felt as if she were going to die if she smelt them.² Other similar cases are on record.³ *Roses* have

¹ The following letter, from a distinguished man of letters, gives a striking example of this idiosyncrasy transmitted through four generations :—"My daughter tells me that you are interested in the ill effects which the eating of eggs has upon her, upon me, and upon my father before us. I believe my grandfather, as well as my father, could not eat eggs with impunity. As to my father himself, he is nearly 80 years old ; he has not touched an egg since he was a young man, therefore he can give no precise or reliable account of the symptoms the eating of eggs produces in him. But it wasn't mere 'stomach-ache' that ensued : but much more immediate and alarming disturbances. As for me, the peculiarity was discovered when I was a spoon-fed child. On several occasions it was noticed (that is my mother's account) that I fell ill without apparent cause ; afterwards it was recollected that a small portion of the yolk of egg had been given to me. *Eclaircissement* came immediately when after taking a single spoonful of egg I fell into such an alarming state that the doctor was sent for. The effect seems to have been just the same that is produced upon my daughter now ; something that suggested brain congestion and convulsions. From time to time, as a boy and a young man, I have eaten an egg by way of 'trying again,' but always with the same result—a feeling that I had been poisoned ; and yet all the while I *liked* eggs. Then I never touched them for years. Later, I have tried again, and find that the ill effects are gradually wearing off. With my daughter it is different ; she, I think, becomes more susceptible as time goes on ; and the effect upon her is more violent than in my case at any time. Sometimes an egg has been put with coffee unknown to her, and she has been seen immediately afterwards with her face alarmingly changed—eyes swollen and wild, the whole face crimson ; the look of apoplexy. This is her own account :—"An egg, in any form, causes within a few moments great uneasiness and restlessness. The throat becomes contracted and painful, the face crimson and the veins swollen. These symptoms have been so severe as to suggest that serious consequences might follow." To this I may add that in her experience and my own, the newer the egg, the worse the consequences."

² "De Subtilitat. Exercit." 142 § 2, p. 463. Hanov. 1634.

³ Th. Zwinger : "Fascicul. Dissert. Med.," p. 25.

caused much suffering to susceptible individuals. We hear of a monk who fainted at the sight of one¹; of a lady who fainted at the smell of *red* roses, though she was fond of putting *white* roses in her hair²; and of a bishop who literally "died of a rose in aromatic pain."³ Schneider, who may be called the Father of rhinology, mentions the case of a woman in whom the smell of *orange flower* produced syncope.⁴ Nathaniel Highmore says⁵ that he personally knew a man in whom the slightest smell of *musk* caused intense headache, followed by epistaxis. A valiant soldier could not bear the sight or smell of *pinks*⁶; Lord Barrymore, a veteran warrior, and a man of strong mind, swooned at the sight of a *tansy*⁷; and J. C. Scaliger, the great scholar, who had been a soldier for a considerable portion of his life, confesses that he could not look on a *water-cress* without shuddering: "I who despised not only iron, but even thunderbolts, who, in two sieges (in one of which I commanded) was the only one that did not complain of the food as unfit or horrible to eat, am seized with such shuddering horror at the sight of a cress that I am forced to go away."⁸ One of his children was in the same plight as regards that innocent vegetable *cabbage*. Then, with regard to animals, there are idiosyncrasies not less remarkable. We read of a Dane, of herculean frame, who had a horror of *cats*. He was asked to supper where, by way of practical joke, a live cat was put on the table in a covered dish. The man began to sweat and shudder without knowing why, and when the cat was shown to him

¹ Amatus Lusitanus: "Curat. Medicinal." Centur. 2, Cur. 3, p. 166.

² Ledelius: "Ephem. Nat. Curios." Dec. ii., Ann. 10, Obs. 8.

³ Cremer: "De rebus Polonicis." lib. viii.

⁴ "De osse cribriformi," p. 367.

⁵ "De Hystericâ Passione," c. ix., p. 35.

⁶ Joseph Lanzonus: "Miscell. Naturae Curiosorum." Dec. ii. Ann. 9, Obs. 40.

⁷ R. Boyle: "Considerations touching the Usefulness of Experimental Naturall Philosophy." Oxford, 1664. Pt. ii., p. 260.

⁸ "De Subtilitat. Exercit." 274, p. 789. Hanov. 1634.

he killed his host in a paroxysm of terror. Another man could not even see the hated form in a picture without breaking out in a cold sweat, and feeling a sense of oppression about the heart.¹ All Robert Boyle's philosophy could not make him endure the sight of a *spider*, though he had no aversion to the society of venomous snakes, toads, and such like "fearful wild fowl."² As regards *sounds*, we have it on the authority of the Father of Medicine, that Nicanor had the greatest horror of the sound of the flute by night, although it delighted him in the daytime.³ A certain unhappy wight could not hear his own name without being thrown into convulsions.⁴ One of the most curious forms of idiosyncrasy on record is that of a student whom the very sight of an old woman deprived of his senses. On one occasion he was carried out from a party in a dying state, caused presumably by the "abhorred aspect" of the *chaperons*. This list might be extended almost indefinitely, but the mere enumeration of such "freaks of nature" can throw no light on the subject of idiosyncrasy. It would be a great mistake to suppose that these peculiarities are matters of fancy, or to dismiss them as hysterical. Within certain limits every individual has his own idiosyncrasies, which only become remarkable when developed to excess in some one direction. Every one is conscious that there are articles of food or drink which do not "suit" him, and that in other matters he has likes and dislikes for which his reason fails to account. There is nothing more strange in a physical idiosyncrasy like those just related than in the mental or moral peculiarities, or rather *individualities*, the sum of which makes up a man's character, and differentiates him from his neigh-

¹ Both these instances are related by Schulzius: "Miscell. Naturae Curiosorum." Dec. 1, Ann. 3, Obs. 46 *et seq.*

² Op. cit., p. 260.

³ Hippocrates: "Epidem." lib. v., 81.

⁴ G. Hannæus: "Act. Hafniens." Vol. v., Obs. 15, p. 60. Francofurti, 1613.

bours. Our "rude forefathers" noted such facts as they found them, without attempting to account for them. Nowadays we, knowing really nothing more about the matter, make a show of explaining such vagaries by means of learned words like *neurosis*, which, like the old definition of orthodoxy, simply means your *-osis* or my *-osis*, and leaves things precisely as they were. *Nervous*, of course, all such manifestations are, for all the secrets of man's being lie hid in his nervous system, but of the conditions giving rise to them we are at present entirely ignorant.

Dr. Marsh has suggested that the *Rhus toxicodendron*, or poison-ivy,¹ affords a good example of an idiosyncrasy analogous to that which is observed in the case of pollen, and the action of the *Rhus venenata*, or poison-ash, would seem to be equally in point. These plants, during the night, or in the daytime when grown in shady places, or even in open ground if the sun be not shining, have the power of secreting in their tissues an acrid juice, and emitting a poisonous vapour, which appears to affect some people very injuriously, whilst others apparently escape unhurt. The following² is a good example of the action of the *Rhus venenata*. The Rev. Dr. Buchanan, of Charlestown, when on a botanical expedition near that place, found a specimen of the poisonous ash, and, knowing its effects upon himself, advised his friends not to pluck it. In spite of this, however, several of the party picked the leaves. One of these suffered from an inflamed arm, two from inflammation and ulceration of the hands with erysipelatous rash on the arms, whilst the rest of the party escaped without any injury. On getting home, the Doctor found a branch hidden among other specimens by a practical joker who was sceptical as to the

¹ The earliest account of this plant appears in the "*Canadensium Plantarum Historia*," Parisiis, 1635, p. 96 (cap. xl.) under the name of *Edera Trifolia Canadensis*. The work contains a drawing of the rhus, but the author says nothing as to its properties, either poisonous or therapeutic.

² "Lond. Jour. Bot.," vii. 159, art. by Dr. Bromfield.

effects of the plant. Next day symptoms of poisoning, viz., swelling of the whole trunk and of the lower extremities, attended with intolerable pain and irritation, confined him to bed, where he was obliged to remain for several days; indeed, he was unable to resume his duties for some weeks.

Fontana,¹ whose observations are especially interesting because he had made very careful studies in connexion with the venom of snakes (his book having been the principal authority on that subject until the appearance of Dr. Weir Mitchell's valuable researches,² and the more recent investigations of Dr. Norris Wolfenden³), says that he would have liked to have made a regular series of experiments on the *Rhus toxicodendron*, but had to give it up, as he poisoned himself on three consecutive occasions with its leaves. From his experiments with the poison of serpents, he was strongly impressed with the idea that no injury could be done unless the skin was broken, but this did not prove to be the case with the *Rhus*, for he was once attacked by a severe disease resembling erysipelas,⁴ after merely touching the back of his hand with a leaf so lightly that he hardly perceived any sensation; and on two other occasions, somewhat similar symptoms were produced on merely touching the leaves. The juice of the plant, however, when directly applied to the hands of two gardeners, did not cause any effect at all.⁵

¹ "Traité sur le Venin de la Vipère," etc., t. ii. p. 158. Florence, 1781.

² "Experiment. Contrib. to the Toxicology of Rattlesnake Venom," New York, 1868. "Researches upon the Venoms of Poisonous Serpents," Washington, 1886.

³ "Journ. of Physiology," vol. vii. pp. 327 and 357.

⁴ Three days after touching the back of his hand dark spots appeared, and afterwards swelling of the face, especially about the eyelids, and the lobes of the ears. There was terrible heat of the skin for a fortnight, and unbearable itching for another fortnight, especially between the fingers, which were red and covered here and there with vesicles full of transparent fluid. There was no fever, but the pulse was very disturbed. There was œdema of the face, and the attack ended with desquamation of the cuticle.

⁵ I am not quite sure whether the effect which *Rhus toxicodendron* has on certain

A remarkable instance is on record in which similar effects, though to a much less violent degree, were produced by roses. It is related of a lady named Heneage, one of Queen Elizabeth's bed-chamber women, who had an antipathy to the flower, that in order to test the genuineness of the case, a rose was placed upon her cheek when she was asleep. The result was that blisters were raised on her skin.¹ Another case which bears more directly on the subject of hay fever is related by Elliotson.² A lady who was a victim to the disease in the ordinary way told him that on handling flowers of grass "her hands always became instantly inflamed." If this case be accepted as true—as it can hardly fail to be, considering the authority on which it is given—it may be said to *prove* the idiosyncrasy theory. Nasal disease, even with the most tortuously reflex complications, could hardly account for the special susceptibility which must have existed in this lady's skin. But if such individual vulnerability by a particular irritant is found in skin, *a fortiori* it may occur in mucous membrane, which is all that is here contended for.

Where a true idiosyncrasy exists, it produces its effects independently of the consciousness of the person concerned; for it has been proved repeatedly that, when articles of diet have been surreptitiously introduced into the food of those

individuals is so good an example of idiosyncrasy as Dr. Marsh imagines. Orfila, however, reports a case which supports Dr. Marsh's view; for he relates that a gardener suffered from a severe attack of poisoning after merely cutting some twigs of the *Rhus*, whilst Dr. Boullou actually inoculated himself with the juice, without being at all affected. As the conditions under which the plant secretes the acrid juice are well known, it does not appear probable that any fallacy in this experiment could have arisen as regards the circumstances under which the juice was extracted (Orfila, "Traité de Toxicologie," 5th ed. t. ii. p. 133. Paris, 1852). Fontana suggests that the invulnerability of some persons may be due to a thick epidermis. As the plant is common in certain parts of the United States and Canada, I would suggest to some of my fellow workers in America that they should make a series of investigations with it.

¹ Kenelm Digby: "Demonstr. Immortal. Animi Rational." Tract. i, cap. 31, p. 435 *et seq.*

² *Lancet*, 1830-1, vol. ii. p. 371.

who are susceptible, the characteristic train of phenomena has invariably been manifested.

The circumstances which seem to influence this idiosyncrasy are *race, temperament, occupation, education, mode of life, sex, heredity, and age*. These various points may, with advantage, be considered in detail.

The influence of *race* is seen in the fact that it is the English and Americans who are almost the only sufferers from the complaint. In the north of Europe—that is, in Norway, Sweden, and Denmark—it is scarcely ever seen,¹ and it rarely affects the natives of France, Germany, Russia, Italy,² or Spain. In Asia and Africa, also, it is only the English who suffer. As far as I have been able to ascertain, the complaint is more common in the south of England than in the north; whilst in the north of Scotland it is very rare. In America it occurs in nearly every State, though diminishing in frequency towards the South. So common is the scourge in the Great Republic, that a few years ago a “Hay Fever Association” was founded, for the “collective investigation” of facts and the mutual protection of sufferers. The yearly report³ of the Association is edifying and amusing reading, being, as it were, a mirror of places “where men sit and hear each other *sneeze*,” to parody a line of Keats. As the hermits of old buried themselves in the Thebaïds or other deserts *quâ non ulla suum femina nôrit iter*, so do these modern persons, with all the culture of

¹ Since writing the above I have made a tour (in August, 1884) through the Scandinavian kingdoms, and, as the result of many inquiries, I find the statement in the text fully confirmed by leading physicians. The disease is not, however, altogether unknown in these countries. A typical case of hay fever is related by O. Glas (“Upsala Läkareförenings Förhandlingar,” Upsala, 1874, p. 98, *et seq.*).

² The rarity of hay fever in Italy makes it all the more remarkable that this little book should have found two Italian translators—Professor Massei, of Naples, and Dr. V. Grazzi, of Florence—both of whom I am proud to number among my former pupils.

³ “United States Hay Fever Association,” Portland, Me., 1884, 1885, etc.

the nineteenth century in their sensitive nostrils, flee into the wilderness to be out of the way of their enemy. I think it extremely likely that the disorder will be found in Australia and New Zealand, but I am not aware that any cases have yet been reported from those countries.¹ In support of the view that race has an important influence, it may be mentioned that in New York, where hay fever is comparatively common at certain seasons, Dr. Jacobi, whose practice lies largely among Germans, has never met with a case of the disease in a person of that nationality, and that Dr. Chaveau, of the same city, has never observed the complaint among his French compatriots residing there.² Beard never heard of a case amongst Indians or negroes, except the one related by Wyman, in which an Indian child was the subject of the disease. Dr. J. N. Mackenzie³ has recently reported a case of hay fever in an adult negro; but, as the symptoms were produced not only by the emanations of hay, but also by sudden atmospheric changes, the dust of coal, and that resulting from the shaking of carpets, door-mats, &c., as well as from tobacco smoke, and the greasy smell of the kitchen, the case does not come within the category of hay fever according to my definition.

The nervous temperament has, undoubtedly, a certain influence in predisposing to hay fever. This, of course, does not mean that all the patients are highly nervous people;

¹ Since the publication of the first edition of my Lecture on this subject I have been furnished with a very interesting case by Dr. W. R. Parker, which is here given in his own words:—"Mrs. C—, wife of Dr. C—, of New Zealand, has been subject to attacks of hay fever for many years past, while residing in various parts of that country. In November, 1883, she was suffering from a severe attack while residing at Ross, a small gold-mining seaport town on the west coast of the South Island; and previously at Reefton, further inland. Both these towns lie in a densely bushy and extremely moist district. She had previously suffered in Nelson, a warmer and drier seaport town in the 'Garden' or 'Kent' of New Zealand."

² Beard, *op. cit.*, pp. 90, 91.

³ "N. Y. Med. Record," p. 427 *et seq.* Oct. 18, 1884.

some are of nervo-bilious, others of nervo-sanguineous temperament; but nearly all belong to the active, energetic type of so-called nervous organisation.

One of the most singular features of this complaint is that it is almost exclusively confined to persons of some *education*, and generally to those of fair social position. In 1879 I had notes of sixty-one cases of hay fever from my private practice, and had seen many others of which I kept no record, whilst amongst my hospital patients I have not met with a single instance of the disease. Of forty-eight cases which came more or less directly under the notice of Blackley, every one belonged to the educated classes; whilst, out of fifty-five cases reported by Dr. Wyman, in forty-nine the patients were educated people. Dr. Merriman¹ also says that the affection belongs "principally to the upper and middle classes." This view, however, has been opposed by Dr. Marsh,² who thinks that the statistics which have been collected on this point are quite untrustworthy.³ His own, however, are so meagre (only fourteen cases), that on this point they cannot be said to have much significance. The influence of the *mode of life* is shown in the fact that the rustic is much less subject to the affection than the citizen. Thus farmers and agricultural labourers, who of all people are most exposed to the disease, very rarely suffer from it, there having been only seven cases among the two hundred reports collected by Beard. It is not possible to say whether the villager owes his exemption to the vigorous health maintained by an out-door life, or whether habitual exposure to the cause of the complaint begets tolerance; but the fact

¹ "Brit. Med. Journ.," vol. i. p. 1315. 1883.

² Loc. cit., p. 6.

³ The lady patient to whom Elliotson was indebted for the identification of pollen as the active agent in producing hay fever, also told him that she personally knew several instances of it among persons belonging to the lower ranks of life. She added that poor people are but little given to accurate observation, and besides have so many colds that hay fever would be likely to pass unnoticed, or at any rate undifferentiated.

remains, that dwellers in towns are much more prone to the affection than those who live in the country.

Sex has a distinct influence, many more men than women suffering from the disease. Out of a grand total of 433 cases cited by Phœbus, Wyman, and Beard, only 142, or about a third, were females. Against these statistics it may be urged that the information on which they are based was collected by circulars, to which, perhaps, women would be less likely to reply than men. This objection, however, does not apply to my own cases, amongst which I met with thirty-eight belonging to the male and only twenty-three to the female sex.

Heredity has likewise a powerful influence. This has been abundantly proved by Wyman and Beard, and it is supported by my own observations. In Wyman's experience there was heredity in 20 per cent., and in Beard's in 33 per cent. Out of my sixty-one cases, in twenty-seven one or more near relatives had suffered in the previous generation. I have also several times treated a father and his children at the same time.

Age to some extent governs the disorder, which in the great majority of cases appears before forty; but several instances have been reported of the first occurrence of the malady in patients as old as sixty. It is somewhat rare for the affection to show itself in very young children, but I have seen it in one case at two years of age, and in another at three. In these cases, as in all those of very young patients that have come under my notice, the little sufferers were the children of parents who had themselves been victims to the complaint. Had not the parents been subject to the affection, it is most likely that the true import of the symptoms would not have been recognised in the children, but would have been attributed to a common cold; and from this it may be inferred that when the complaint attacks the young it is often overlooked.

Many agencies of various kinds have been looked upon as the *exciting causes* of this disease, but there can now be little doubt that *pollen is the essential factor in the case of those who possess the peculiar predisposition*. Before, however, proceeding to show that pollen is the real cause of the affection, it may be well to pass in review some of the other sources to which its origin has been attributed. The most important of these are heat, light, dust, benzoic acid, coumarin, excess of ozone, and over-exertion, or several of these influences in combination. The theory that there is a *peculiar predisposition* has also been recently opposed, and an attempt has been made, unsuccessfully, it appears to me, to show that the vulnerability depends on gross structural changes within the nose. This view, which may be called the pathological theory, will also meet with due consideration.

Heat.—Popular observation had already associated hay fever with effluvia from grass or hay, at the time when Bostock, from his own personal experience, put forth the view that the affection is due to the influence of solar heat. The obvious difficulties in the way of this theory led Phœbus to attribute the affection to "*the first heat of summer*," which, he observed, "is a stronger cause than all the grass emanations put together." Later on, however, Phœbus remarked that the "first heat of summer only acts in an indirect manner as an exciting cause"; and he admitted that hay and the blossom of rye cause exacerbations. Heat alone will not, however, produce the disease. It is not met with in the plains of India when the heat is greatest, though occasionally it is seen in the cooler months, before the vegetation is burnt up. Hay fever is also found in the milder climate of the Indian hills, when the grasses and cereals are in blossom; and one of my patients told me that he suffered much in the plains when the *jowar* or *jowari* (millet?) was in bloom in April and in October. The intense heat of the desert does not produce the disease, nor does it

occur at sea in the sultry equatorial regions, though the heat, when vessels are becalmed, is sometimes almost beyond endurance. In America, hay fever is much more common in autumn than in the tropical summer of that country.

Light.—The observations as regards heat apply equally to light. Phœbus thought that the *longer days*, which produce a more continuous action of light, are perhaps to blame; but where the light is strongest and lasts longest, in the land of the “midnight sun” itself, hay fever is almost unknown. At sea, when the sun is bright, it is well known that nothing can exceed the glare; yet a sea-voyage is the best safeguard for the sufferer from hay fever. Persons with a sensitive mucous membrane, especially those subject to hay fever, are no doubt sometimes liable to attacks of sneezing from sunlight, and incautious observers might mistake these symptoms for true hay fever. Some of Beard’s patients even attributed the affection to gas-light, but this is used much more in winter, when hay fever is absent, than in the English summer and American autumn, when the affection prevails.

Dust.—This is a more difficult subject to dispose of. Most writers who accept dust as a cause of summer catarrh speak of “common dust”; but, as Blackley remarks, there is no such thing as *common* dust. The constitution of dust depends upon the geological character of the soil, upon the vegetation which it supports, and upon the season of the year, as well as on “the number and kind of germs and other organic bodies” present in the atmosphere. Beard’s statistics if accepted without consideration, strongly point to dust as the most common cause of hay fever, for out of 198 patients no less than 104 attributed the affection to dust. Of these 198 cases, however, 142 occurred between May and September; and it may well be asked, How was it that dust did not affect these patients in the winter months? Does this not clearly point to the presence in the dust of some special

irritant, during the summer and autumn months, which does not exist at other times? In England, in the months of February, March, and April, when strong east winds often blow clouds of dust against the face, symptoms of hay fever do not appear, whilst in June and July, when there is comparatively little dust, the complaint is rife. It is true that in many of Beard's cases, collected by circulars, the patients attributed the affection to "indoor dust," and some even to "cinders." But as people stay in the house more in winter than in the autumn and summer, and use fires at that time, these agencies, if of any real power, would produce their greatest effect in winter. Directly the opposite, however, occurs. Is it not highly probable, therefore, that these patients were misled as to the real cause of their malady? We all know how easy it is for the trained physician to make erroneous observations and to overlook important physical signs, and how much more likely is the untutored patient to make a mistake in the obscure and highly complicated problems of etiology!

Ozone, Benzoic Acid, &c.—An excess of ozone in the atmosphere was suggested by Phœbus as a possible cause of hay fever, but Blackley purposely breathed air highly charged with this substance for five or six hours without effect. He, moreover, inhaled artificially-prepared ozone, in quantities far exceeding what is ever found in the same volume of atmospheric air, without feeling any inconvenience. The same physician also studied the effects on his own person of benzoic acid,¹ coumarin (the odorous principle of many flowering grasses), and of the volatile oils which impart to many plants, such as peppermint, juniper, rosemary, and lavender, their characteristic perfume. The results were in all these cases entirely negative.

¹ This substance has been shown by Vogel to be contained in *Anthoxanthum odoratum* and *Holcus odoratus*, the two species of flowering grasses to which the causation of hay fever has been in a special manner attributed.

Over-exertion, or prolonged exercise, in the open air, never has any effect in cold weather, or indeed at any other time except when grass is in flower. Its influence, however, in *aggravating* hay fever, in its proper season, is very great, and will presently be considered.

Combined Causes of Hay Fever.—Several writers have contended that, although no one of the above causes may alone be sufficient to produce hay fever, several of them acting together may be able to do so. Such theories are the last resource of those who are unable to discover the true etiology, and there is not a tittle of evidence in their support.

The Pathological Theories.—The view that hay fever depends on gross structural changes within the nose deserves serious consideration, on account of the brilliant practical results which are claimed for modes of treatment based upon it, and also because it is advocated by several American physicians of well-known ability. As already remarked (page 20), the pathological theory does not at all account for the fact that only a very small proportion of those people who have chronic disease of the nose actually suffer from hay fever. I must also premise that the theory is not at all in accordance with my own experience; for, in the great majority of cases of this disease which have come under my notice, there has been no visible structural change in the nasal passages, except a congested condition during the period that the patient was actually suffering from hay fever. For reasons above stated, however, it is necessary to discuss fully the latest views on the etiology of the complaint now under consideration. Those of my readers whose connexion with the dissecting-room is of a somewhat remote date will, perhaps, pardon me for reminding them that the veins over the turbinated bones between the periosteum and the mucous membrane have been shown by Kohlrausch to form a

“cavernous network,” and that this structure was subsequently proved by Bigelow to be of a truly erectile¹ character. Voltolini² pointed out that each turbinated bone, in spite of its extremely delicate structure, can, after maceration, be seen to be perforated by countless minute holes. Through these apertures small vessels pass, and they pierce the bone in such abundance that in a space of three square millimètres as many as ten open vessels have been counted. The soft parts are closely adherent to the elevations and depressions of the periosteum, covering the bone, as Voltolini says, “just as a sponge does the hard coral beneath it.” Dr. Daly,³ who was the first to enunciate the theory that, in cases of hay fever, structural changes would generally be found within the nose, reported a case in which the destruction of the hypertrophied tissue of the turbinated bodies by electric cautery had effected a cure of hay fever that had lasted for twenty-one years. In a second case, in which there was a polypus in the nose, with a generally thickened condition of the mucous membrane of the naso-pharynx, the removal of the polypus and treatment of the pharyngeal membrane entirely relieved a patient who had suffered from hay asthma for six years. In a third case, treatment of the

¹ This view has been lately contested by Dr. Bosworth, of New York, who observes (“*New York Med. Journ.*” April 24, and June 1, 1886):—“This unfortunate designation of erectile tissue has been retained in all subsequent writings on the subject, and our ideas as to the true function of these tissues has thus been very seriously hampered in the association of the erectile tissues of the nasal cavities with the other erectile tissues in the body. We are, therefore, led to regard them as bodies whose proper function it is to become erect. I do not recall any very definite observations on the subject of the true function of these cavernous bodies other than the somewhat vague observations of Bigelow, who mentions having seen them swell and subside in animals in much the same way as true erectile tissues in other portions of the body. That this is the function of the turbinated tissues I do not believe. I have never seen the slightest evidence in man of any physiological swelling or subsidence of these tissues, nor can I conceive any possible physiological function that could be served by such action on their part.”

² Author’s “*Diseases of the Throat and Nose*,” vol. ii. p. 236. London, 1884.

³ *Loc. cit.*

turbinated bodies also brought about a complete cure in a patient who had been a victim to the disease for six years. These cases are certainly remarkable, and they reflect great credit on the operator.

In 1883, Dr. Roe,¹ whilst admitting "the dependence of hay fever upon the presence of pollen and other irritating substances floating in the atmosphere,"² maintains "that it has been observed that, in every instance in those who were subject to hay fever, more or less disease or hypertrophy of this erectile tissue existed."³ He considers that the hyperæsthesia is associated with, or occasioned by, a diseased condition, either *latent*⁴ or active, of the naso-pharyngeal mucous membrane, and with an hypertrophied condition of the vascular tissue covering the turbinated bones and the lower portion of the septum; and, taking into account the cavernous tissue of the turbinated bodies, he thinks that the vasor-motor theory fully explains the phenomena of the disease. In his more recent publication,⁵ Dr. Roe has somewhat elaborated his views. He calls attention to the spiculæ of bone, which, he observes, are often found projecting across like spurs, exciting irritation and producing thickening of the opposite surface. Dr. Roe is of opinion that every person who suffers from hay fever has, at some other period of the year, "when entirely free from the attack of hay fever, more or less chronic rhinitis or nasal catarrh, although often not sufficiently severe⁶ to give rise to much annoyance." In other words, Dr. Roe thinks that everybody who is subject to hay fever has a "cold in the head" some time during the year. Although I have not gone into this question, I do not feel

¹ "Pathology and Radical Cure of Hay Fever." Appleton & Co., New York.

² Ibid., p. 6.

³ Ibid., p. 13.

⁴ The italics are not in the original.

⁵ "Hay Fever." Appleton & Co., 1884.

⁶ Second article, p. 7.

inclined to dispute the position which my friend has taken up, for I believe there are very few people who do not suffer from coryza at some period during the entire twelve months. He admits, however, that "in some cases there must be a special proclivity for these terminal nerve-fibres to become diseased, when so small an amount of disease of the surrounding tissues so readily affects them, and when in other cases we find no indication of these nerves being involved, however badly the surrounding tissues may be diseased." This statement appears to me to concede the whole question at issue. Special proclivity and idiosyncrasy are so nearly allied as to make it unnecessary for practical purposes to attempt any differentiation.

In the interval between the first and second articles of Dr. Roe, Dr. J. N. Mackenzie endeavoured to show that there are certain sensitive spots in the nose corresponding in all probability to the cavernous structure already described; that all parts of this area are not equally sensitive, the most sensitive spots being probably represented by that portion of the membrane covering the *posterior end* of the inferior turbinated body and the septum immediately opposite; that the tendency to the exhibition of reflex phenomena varies in different individuals, and is probably dependent on the varying degree of excitability of the erectile tissue. "In some," says Dr. J. N. Mackenzie, "the slightest touch is sufficient to excite the reflex act, while, in others, chronic hyperæmia or hypertrophy of the cavernous bodies seems to evoke it by constant irritation of the reflex centres." The most serious objection to the views of this author consists in the fact that he does not seem to realise the true nature of hay fever as a periodical disease occurring *only* during the season when hay or certain flowers are in blossom, for, in one of his two illustrative cases, he remarks, "the attacks come on at all seasons of the year." Again, his views as to the situation of the supposed sensitive

areas are directly opposed by Professor Hack,¹ who, though an advocate of the vasor-motor theory in connexion with hay fever, has found that reflex manifestations do not occur until the *anterior part* of the lower turbinated body has first become turgid. Dr. J. N. Mackenzie, on the other hand, maintains that the *posterior end* is the part to be incriminated.²

As the result of a great number of experiments, different spots in the nose being successively touched on different occasions with the nasal probe, I should say that the most sensitive spot varies in different individuals, and also in the same individual at different times. I have treated a lady who frequently suffers from violent sneezing, whose nose is so sensitive that even a slight touch externally will produce the most severe attacks, lasting often for half an hour or an hour, whilst if an instrument is introduced even within the vestibule of the nose, sneezing of the most intense character at once takes place. I could never discover in this case that any one spot in the interior of the nose was more sensitive than another, whilst, beyond general congestion, there is no appreciable local disease; there is no enlargement of the turbinated bodies, no projecting bony point, nor any kind of obstruction.

Dr. Harrison Allen has put forward³ the view that hay fever depends solely on obstruction⁴ of the nasal passages, and that the cure consists simply in the removal of that

¹ "Wien. Med. Wochenschrift." 1882—Nos. 49, 50, 51, and 1883—No. 4, *et seq.*

² Already the importance of the "cavernous structure," as a cause of reflex phenomena, is on the wane. At the International Medical Congress held at Copenhagen, Dr. Bernard Fränkel, who regards the nose as an important seat of reflex phenomena, maintained that the sensory twigs of the trigeminal nerves were the starting-points of the remarkable train of symptoms which have been observed in some cases in connexion with nasal disease.

³ Loc. cit.

⁴ Dr. Bosworth (*loc. cit.*), who attributes hay fever largely to nasal obstruction, thus explains the *modus operandi*:—"This illustrates how the continued action of comparatively trivial causes will eventually lead to notable morbid changes, for,

obstruction ; but Dr. Roe¹ has opposed this view, calling attention to the fact that very few of those who suffer from obstruction of the nares are subject to hay fever. The truth is that both these contentions are correct. The influence of the swelling in the interior of the nose depends entirely on its situation, *i.e.*, whether the nose is blocked anteriorly, in its middle third, or at its posterior part. When the obstruction affects the posterior two-thirds it is often a source of much trouble, greatly aggravating the symptoms of those who possess the hay fever idiosyncrasy, by causing the pollen grains to remain lodged in the nose. If, on the other hand, the obstruction is quite at the anterior part, it is rather an advantage to hay fever patients, as the entrance of pollen is thereby in great measure prevented. These observations have been fully borne out by cases that have come under my observation, and a good illustration has been furnished of the beneficial effects of anterior obstruction by Dr. Beverly Robinson.² Before dismissing this point I may remark

if this action continues for a time, the incoming current of air being checked or obstructed, the air behind the point of obstruction being rarefied, a tendency is rapidly developed in the mucous membrane of the nose to sag down or pouch into the cavity. This puffing out of the membrane is attended with a dilatation of the blood-vessels, especially those of the turbinated tissues. . . . Let us illustrate this by a case of deflection of the cartilaginous portion of the nasal septum. Cases frequently come under our observation in which an injury of the nose has resulted in an angular deflection near the nostril, producing marked stenosis. The clinical history of the case will almost invariably show that the prominent symptoms resulting from this injury do not set in for five, ten, or even fifteen years later. What has happened has been this : The patient has gone on all this time breathing through a narrowed passage. With each act of inspiration the air behind the point of obstruction is rarefied ; the membrane is subjected, therefore, to something of a dry-cupping process which produces a marked relaxation of the vessels. As this process has been going on for years, it has resulted in pouching down or sagging out of the turbinated tissues, together with a certain amount of local inflammation which is produced by the turgescence, and this finally results in permanent impairment of the respiratory functions of the mucous membranc."

¹ Loc. cit. (second article), p. 8.

² *Medical News*, July 17, 1886.

that, since my attention has been specially directed to the pathological theory, I have made very careful rhinoscopic investigations on twelve patients who had suffered from hay fever every summer for many years. The oldest case was of seventeen years' duration, the most recent dated three years back. These cases were all repeatedly examined, both when hay fever was present, and later on, when that complaint had passed off. Under the latter circumstances, in only one instance was there any evidence of disease within the nose, and here there was merely swelling of the anterior extremities of the inferior turbinated bodies, such as is often seen in persons who suffer no inconvenience, and consider themselves perfectly healthy. Though in some of the American cases morbid conditions, such as hypertrophy of portions of the turbinated bodies, projecting bony spiculæ or exostoses,¹ and chronic rhinitis have been found, such cases will prove in the end, I believe, to be the exception rather than the rule. I myself have treated hundreds of patients who have suffered from chronic disease of the nose (such as polypus and enlargement of the turbinated bodies) who have never been affected with hay fever; and, in the worst case of nasal irritability I have ever seen, in which there was intense hyperæsthesia of the Schneiderian membrane, with constant sneezing on the mildest provocation, the patient was entirely free from the complaint now under consideration.

Until the year 1880 it had not been my custom to examine the interior of the nose except in the case of patients who complained of nasal disease; but some eight years ago, with the view of making measurements and drawings of the interior of the nose, and comparing the relative advantages of different speculums, I examined the nose of nearly every patient who

¹ Exostoses and bony ridges are, however, much more common in the nose than hay fever. In 2,152 skulls, examined under my direction in the Museum of the College of Surgeons, exostoses were found in 170 specimens, and bony ridges in 673. ("Diseases of the Throat and Nose," vol. ii. p. 390.)

consulted me. My investigations caused me some surprise, for the appearance of the interior of the nose was very seldom up to the standard of the descriptions and illustrations of the best anatomical works. In some, one or other of the turbinated bodies was swollen; in a large number there were slight bony or cartilaginous outgrowths. In very few cases were the two nasal passages precisely of the same colour or form, whilst a rectilinear septum was extremely rare. Indeed, every one of these cases could have been looked upon by an enthusiastic rhinoscopist as an example of disease, though not one of the patients ever complained of any inconvenience connected with the nose. But, after all, does not the use of the handkerchief in itself imply a condition of the nasal mucous membrane other than that of health? Is it natural that secretions should form, and have to be constantly cleared away by an artificial process? And yet it seems hard that nearly every person who occasionally uses the pocket-handkerchief should be considered as a fit subject for operative treatment.

The extent to which the *vasor-motor* system participates in the development of the symptoms of hay fever has been, I think, much exaggerated. The asthmatic symptoms of hay fever seem to be regarded by Hack and others as a reflex neurosis, resulting from irritation of the nose.¹ This is, no doubt, true in some cases, but even when asthma is produced in this way, the nerve action takes place through the fifth

¹ The nose, which from a medical point of view was formerly looked upon as an organ of quite secondary importance, has lately received a degree of attention which more than compensates for past neglect. Professor Hack, of Freiburg, maintains that nightmare, cough, hemicrania, brow ache, certain vasor-motor disturbances accompanied by quasi-erysipelatous symptoms (in which there is temporary redness of the nose and cheeks), attacks of giddiness, epilepsy, rhinorrhœa, and hay fever, often owe their origin to polypus or tumefaction of the nasal mucous membrane. Although these views have received the support of a number of well-known practitioners, there has, perhaps, been a trace of exaggeration in connexion with this new discovery, and, in some cases, it is possible that the wish has been parent to the thought.

nerve, not through the *vaso-motor* system, which is probably only concerned by correlation. The *reflex* theory, however, altogether ignores the *direct* passage of pollen into the bronchial tubes and air-cells. Again, although it is a familiar fact that irritation of the lining membrane of the nose causes lachrymation, it appears to be forgotten that *direct* irritation of the conjunctiva will produce the same effect in a much more severe degree. In a bad case of hay fever which I saw a few years ago, the patient, by means of an oro-nasal respirator, succeeded in freeing himself from sneezing and asthma, but he could never get spectacles which completely excluded the pollen from the eyes, and he consequently suffered much from *conjunctivitis*.

Having shown what does *not* generate hay fever, its real mode of origin must now be demonstrated.

Blackley's observations leave no doubt that the cause of hay fever is *the action of pollen on the mucous membrane*. His experiments were framed on a most comprehensive plan, and carried out in a rigorously scientific spirit. By well-devised tests he succeeded in proving—1st, that in his own person the inhalation of pollen always produced the characteristic symptoms of hay fever; 2ndly, that in his own case, and in that of two other persons, there was a direct relation between the intensity of the symptoms and the amount of pollen floating in the air; and 3rdly, as already shown, that none of the other agents referred to, such as heat, light, dust, odours, or ozone, can of themselves cause the complaint.

It may, however, be said that granting that pollen is the cause of hay fever, the disease should then occur only when the nose of a too susceptible patient is brought into actual contact with flowers or flowering grasses. In that case there would be no difficulty about the matter; give the victim a posy of flowers, and at once, "*medio de fonte leporum surgit amari aliquid*;" but we often see people violently affected even when not in the immediate neighbour-

hood of vegetation. The riddle is easy to solve, when it is remembered that during the flowering season the air teems with pollen-grains floating in it and carried about by the wind long distances from the parent flower. It has long been known that the air is full, not only of solid particles of dead matter, but of various forms of animal and vegetable life. Since Ehrenberg first proved this by microscopic examination in 1830, it has been confirmed by many subsequent observers. Of the vegetable substances found in the air, by far the largest portion consists of the pollen of grasses and flowering plants. Blackley's exhaustive experiments on the different kinds of pollen found in the air, and the numbers present under various conditions of the atmosphere, have left very little for any other observer to do in this field of research. I do not pretend to have added anything to his conclusions, but I have been at considerable trouble to verify them, with the result that I can fully confirm them. My experiments, in which I had the advantage of the assistance of Mr. R. W. Boyce, Demonstrator of Botany in University College, were made in 1885. The *modus operandi* may be called a sort of *air-dredging*, the "catch" being afterwards thoroughly inspected with the microscope. Our atmospheric fishing-tackle was of the simplest kind. The solid deposit from the air was collected on thin coverslips $\frac{3}{4}$ of an inch in diameter, to the upper surface of which a small cardboard handle was attached with marine glue. By means of these handles the little pieces of glass could be easily adjusted and fixed in any position that might be desired. Thus, one could be put in the hat-band, and the amount of pollen likely to be met with in the course of a walk could be ascertained; or one could be pinned on the outside of a railway carriage, etc. The surface of these pieces of glasses was covered with a sticky coating, so that when the air was driven against it, any solid particles in it were caught and retained on the glass like jetsam left on the beach by the receding waves. The

composition of this *pollen-lime* is, as follows¹:—1 part water, 2 parts proof spirit, 1 part glycerine, 5 grains of carbolic acid dissolved in 7 drachms of the fluid.

The carbolic acid was added to prevent insects attracted by the glycerine from making away with the sweetened pollen. I also had some plain wooden supports made, averaging about 5 feet in height. The top of each of these was "capped" by a piece of bevelled wood, 5 in. by 5 in. whilst from 3 to 4 inches below this there was a small wooden platform. When in use three or four of the glass slips already mentioned were fixed to each support, some being placed vertically, and some horizontally. The slips—or *nets*, to carry on the piscatorial figure—were set once in every 24 hours; some being placed to windward, others to leeward, and others in an intermediate position, certain of the slips being horizontal, and others vertical in each case. When they had been exposed for the proper length of time, they were taken down, and the number of pollen-grains found in each was carefully counted under the microscope. This, as might be supposed, is not altogether an easy thing to do, but it was accomplished in the following manner: A very thin, perfectly transparent sheet, or one might almost say film, of mica was fixed with Canada balsam to an ordinary microscopic slide. Then, with a needle, the space of one centimètre, with lines dividing it into as many secondary spaces as convenient, was scratched on the mica. The columns into which the centimètre is divided are of such width as easily to fall within the field of the microscope when using a 1-in. objective, and an ordinary eyepiece. A coverslip on which is a deposit to be examined is now placed with its under surface over the centimètre, a small drop of the fluid above described having previously been placed

¹ For this formula, I am indebted to Dr. Blackley, the only difference being that I use a little less water than he recommends, having found his preparation rather too fluid.

between them, so as to ensure temporary adhesion of the slip to the mica. Then, the pollen-grains are focussed with the 1-in. objective, and the lines on the mica showing through the coverslip, the grains in each column can be readily counted.

The experiments were made between June 9 and July 24. Two series of observations were made, one in the charming grounds of Sir Spencer Wells at Golder's Hill, the other on the top of the tower of the Fire Brigade station. In both situations a vast expanse of meadow-land stretched northwards and westwards towards St. Albans and Harrow, whilst London lay far behind to the south and east. The season was, on the whole, a good one, haymaking taking place at the usual time, towards the latter part of June. The daily number of pollen-grains found on the slides fluctuated very much, as might be expected; the average gradually rising till the end of June, and falling off rapidly in July. The period of greatest intensity was during the last ten days of June. In June the number varied from 20 to 1,250 in the square centimetre, the former amount having been found on the 17th, which was rainy, with a temperature of 103° (in the sun), and the latter on the 25th, which was showery and windy, with a temperature of 67° . It should be noted, however, that the preceding day had been extremely fine and hot, the thermometer registering 126° (in the sun), in addition to which *hay-cutting had commenced in some of the fields*. The results obtained at the tower were much the same, the average "catch," however, being considerably less than at Golder's Hill. A certain amount of pollen was also found on slides exposed in the very heart of London. Thus, on June 24th, 15 grains, and on the 27th 14 grains to the square centimetre were found in one of the "long unlovely" streets which run north and south through the parish of Marylebone. On only two days, between June 15th and July 11th, was the air in this by no means rural situation free from pollen.

On July 12, during a journey of two hours' duration, from London to Bognor, in the early morning, 28 grains in the centimètre were counted, and later in the day 37 in the centimètre were found on the line from Bognor to Brighton.

The causes influencing the amount of pollen in the air, therefore, are the following :—1. The time of the year. Our common meadow-grasses reach maturity as a rule towards the end of June, but this process will be delayed or hastened by atmospheric conditions, that is to say, by the “backwardness” or “forwardness” of the season. 2. Daily variations in the quantity of pollen found are produced by differences of temperature and moisture. A high degree of temperature and plenty of moisture are favourable to vegetable growth. 3. The quantity of pollen in the air will be influenced by the actual amount of it produced by the grasses, which again depends on the conditions above described ; by the strength of the wind ; and by rain, especially if heavy and long-continued.

The question naturally arises, Is there anything in the nature or structure of pollen which is calculated to set up irritation? Everybody knows that the yellow dust seen on the surface of many flowers is pollen ; but, for the convenience of those who have not studied the science of botany minutely, it may be desirable to enter into further detail.

Pollen is the powdery substance produced in the stamens of all flowering plants, and is destined to fertilise the ovule. This is accomplished in the first place by the transference of the ripe spores from the anthers to the stigmas, and in the great majority of cases from the anthers to the stigmas of different plants of the same species ; and secondly, by the development of a tube, whereby the contents of the pollen grain are brought into relation with the ovule. The first process is usually accomplished either by means of the *wind* or by *insects*. If through the former agency, the plants are said to be *anemophilous* ; such are the Grasses, Pines,

Birches, Poplars, the Sorrels of the order Polygonaceæ and the genus *Artemisia* amongst the Compositæ, together with certain others. The flowers of these plants are, as a rule, inconspicuous, as, for instance, the dull, grey *Artemisia* of the sea-shore ; and the spores are very often mature when as yet the leaves are very small, so that the majority of these plants blossom in the spring. Though the total amount of the pollen of the anemophilous trees is small in proportion to that of the grasses and plants blooming in summer, it may account for some of the early cases of hay fever. The quantity of pollen produced by anemophilous plants is very great. The grains are of a light texture, not coated, or only to a very slight degree, with the oily substance surrounding other pollens ; and in the Pines increased lightness is secured by the presence of two air-sacs, a fact which accounts for the great distances to which their pollen is often carried by the wind. On the other hand, the pollen of insect-fertilised or *entomophilous* plants, is heavier ; the spores are larger, as a rule, often sculptured and covered with a characteristic oleo-resinous substance. The flowers are generally showy, often irregular and scented.

The pollen of anemophilous flowers is that which under ordinary circumstances induces hay fever. Of these the grasses are the most abundant, and Dr. Blackley is, no doubt, right when he calculates that they produce 95 per cent. of the pollen found in the air. In most meadows also the Sorrels (*Rumex acetosella* and *acetosa*) are very abundant, and produce a large amount.

It is interesting to note that the pollen of flowering plants is analogous to the male, or micro-spores produced by many Cryptogams ; and that *Lycopodium* powder once called "pollen" has been found by me (see page 58) to produce the symptoms of hay fever.

In structure the pollen grain is, in its younger stage at least, strictly comparable to a vegetable cell ; a nucleated

mass of protoplasm surrounded by a cell-wall. Later, however, this wall differentiates into an outer cuticularised layer, the *extine*, and an inner thinner one the *intine*: on the former are produced the characteristic markings of some pollens, such as spines, warts, ridges, etc., and it also may present one or more spots where either this coat is very thin or cracked, or where a piece falls away, so as to allow the intine to protrude as the pollen tube. The protoplasm gives rise to the *fovilla*, a roughly granular substance, containing, according to Sachs, starch-grains and drops of oil. The older botanists described two kinds of granules or "corpuscles"; the one extremely small, spherical, and about the $\frac{1}{30000}$ of an inch in diameter, the other much larger, spherical, oval or cylindrical with tapering ends, and from the $\frac{1}{4000}$ to the $\frac{1}{5000}$ of an inch in diameter; these larger granules were supposed to exhibit contractile movements, and were, therefore, thought to be of an infusorial nature. Dr. Blackley describes the smaller granules as collecting together and assuming various shapes, often in "the form of rods of 5, 6 or 7 granules in a line;" and establishes the identity of these rod-like bodies with similar ones, which he found in examining the nasal mucus, when suffering from hay fever. He remarks that unless he had known that they were in all probability derived from the pollen grains, he would have considered them as belonging to the infusoria; and he further thinks it highly probable that they are identical with the vibrio-like bodies, which Helmholtz discovered in nasal mucus during the prevalence of the disease, and which he looked upon as the cause of hay fever.

The *mechanism* of the disease remains to be considered, that is to say, the exact way in which the pollen behaves when it has been successfully "inoculated"—to adopt the fashionable scientific slang of the day. As the granules are only $\frac{1}{10}$ the size of the blood corpuscles, it is highly

probable, as Mr. Wright Wilson¹ has suggested, that they enter the blood-vessels by actual penetration of the walls, and it is not improbable that the *malaise* which is experienced in hay fever may be due to the presence of this granular matter in the general circulation. It appears probable, however, that the action of pollen is dependent more on its vital than on its chemical properties or physical characteristics. The pollen which has the longest "pollen tubes" (as in the case of *Liliaceæ*) is far less irritating than that of the *Graminaceæ*, in which the pollen tubes are quite rudimentary, and the amount of the oleo-resin seems to have little effect in so far as the excitant properties of the pollen are concerned. On the other hand, as a living organism capable of undergoing some degree of development when deposited on mucous membranes more or less exposed to the air, pollen appears to possess exceptional properties.

Experiments which I have made on persons not subject to hay fever have proved conclusively to me that pollen is a peculiarly irritating dust. Thus, if pollen from any of the grasses figured in the frontispiece of this work be rubbed into the nasal mucous membrane of a healthy person, a feeling of stuffiness in the nose will come on in the course of an hour or two, and last several hours. The sensation is like that experienced at the commencement of a cold, but there is no sneezing or "running from the nose." The effect produced by pollen on the non-susceptible is considerably more active than that of tannin, alum, and many substances of much stronger chemical character. Why pollen should prove a much more highly exciting substance to the mucous membrane of some persons than to that of others has not yet been determined. It may, however, be found that the proclivity is associated with special keenness of smell, which implies a nervous apparatus of exceptional sensitiveness; or

¹ "Lancet," Oct. 6, 1873.

it may be due to individual peculiarities in the nostrils, such as absence of a sufficient supply of vibrissæ, which serve as janitors to keep out irritating substances ; or want of mobility in the alæ nasi, which in the natural state of things shut the door against the intrusion of anything likely to do harm to the delicate parts within. Again, the mucous membrane of the nose is, as a rule, more or less coated with adherent mucus, in many cases amounting to a thin film spread over the surface. It is conceivable that if the vibratory cilia were unusually active in any given case this would not occur, and the membrane would be left bare and moist, and thus more open to irritation by any foreign matters deposited on it. I throw out these hints, not as fully-formed theories ready to bear the attacks of adverse criticism, but as seeds of suggestion, which may possibly bear a harvest under the cultivation of workers younger than myself, and with more time for researches.

Blackley's experiments were made with pollen of various grasses and cereals, and with that of plants belonging to thirty-five other natural orders.

The grasses which, as already stated, were at one time considered to be especially active are the sweet-scented vernal and oat-like soft grasses ; but this idea, no doubt, originated in the extremely fragrant odour of these plants, and there is no reason to suppose that their pollen is more active than that of the meadow foxtail, and the various *Poæ* and *Loliæ*. The pollen of rye is, however, more potent than some of these, and that of wheat, oats, and barley is also very active. The careful observations of Blackley show that in England, during the season of hay fever, 95 per cent. of the pollen contained in the atmosphere belongs to the *Graminaceæ*. This order generally comes into full blossom between *the end of May and the latter part of July*, which is precisely the period of the year when hay fever prevails. If the season be wet and cold, the disease usually sets in

rather later, and is milder in character than when the weather is fine and the vegetation luxuriant.

There are persons who can resist the pollen of grasses, but are affected by that of the rose; and this idiosyncrasy has been long recognised in America, where the complaint is called "rose cold." This interesting affection is so closely allied to hay fever, that I have thought it worth while to give a short account of it in an Appendix (p. 83 *et seq.*).

In America, as already remarked, the pollen of the Roman wormwood (*Ambrosia artemisiæfolia*) appears to be the most common cause of hay fever, and Dr. Marsh even maintains that it is the sole source of the complaint; but in this respect he has undoubtedly gone too far. His observations, however, are so interesting, that I think they deserve to be quoted in detail.

"I have noticed," says Dr. Marsh, "the extreme abundance and wide diffusion of the ambrosia during my travels to escape it. In this section of the country it may be said to grow everywhere. Roadsides, stubble-fields, waste places everywhere abound with it, and few of the most highly cultivated gardens are free from it. It is only after the attention has been directed to the plant that its universal presence is observed. It seems to spring up by magic everywhere. I have counted hundreds of plants within a few blocks in New York city, in the neglected courtyards and spaces about houses and churches. I have found that it extends up to the limits of the catarrhal regions, and not at all, or in extreme rarity, in the exempt regions. . . . I have observed that the course of the disease has been directly affected by the character of the season and the amount of ambrosia springing up. For instance, in 1875, the ambrosia was very forward in season and abundant in quantity. Severe symptoms came on early, and those who remained at home suffered more than usual. In 1876, owing perhaps to the extreme heat and drought, there was not one quarter the

amount of ambrosia as in the previous year, so that I myself was able to remain at home a week later than my usual time, and the season was generally found a mild one for hay fever subjects."

Dr. Wyman¹ found that, when a parcel containing this plant was opened at White Mountain Glen, where he had retired in order to avoid hay fever, he and his son were immediately attacked with all the symptoms of the malady. *The plant blossoms in August and September, and it is then that hay fever most prevails in America.* The ambrosia (which belongs to the genus *Ambrosiaceæ*, order *Compositæ*) fortunately does not grow in Europe. Several varieties of the *artemisiæ*, a closely-allied genus, are met with in England, and I think it not improbable that some cases of hay fever which have occurred at the seaside in this country may have been due to the pollen of the *Artemisia maritima*, or its variety, *Artemisia gallica*. It is curious that, except in the case of Indian corn, the pollen of *grasses* appears to have but slight effect in America, though a mild form of hay fever is met with in that country from May to August.

There are certain supposed fallacies in the pollen theory which must be referred to. Thus, a case is mentioned by Dr. Walshe,² in which the patient retained the symptoms of hay fever during a passage across the Atlantic, and another has been reported by Dr. Abbott Smith,³ in which the disease came on at a distance of nine miles from land. These are, I believe, the only authentic instances in which hay fever has continued to exist or has originated at sea, and they are open to various explanations. It has been distinctly shown by Blackley that pollen may be retained in an article of dress for many weeks, and in Smith's case the patient, who was yachting, experienced the symptoms after assisting "to hoist

¹ Op. cit. p. 101.

² "A Practical Treatise on Diseases of the Lungs." London, 1871, 4th ed. p. 228.

³ "On Hay Fever." London, 1866, 4th ed.

the sails." The attack occurred on the 13th of June, and it is not unlikely that when the sails were unfurled a large quantity of pollen collected in their folds was set free. In Walshe's case, the symptoms may have been kept up by some other irritant to which the patient may have had a peculiar susceptibility, or the case may not have been a true example of hay fever, but of ordinary asthma, complicated with catarrh. It is not altogether impossible, however, that pollen may be deposited on a ship miles away from land. Darwin¹ has shown that dust is sometimes carried by the wind far out over the Atlantic. "The dust," he observes, "falls in such quantity as to dirty everything on board, and to hurt people's eyes; vessels have even run on shore owing to the obscurity of the atmosphere." Again, in speaking of the distribution of pollen, Darwin reminds us that the ground near St. Louis, in Missouri, has been seen covered with pollen as if it had been sprinkled with sulphur, and there is good reason to believe that this had been transported from the pine-forests at least 400 miles to the south.² A shower of yellow pollen was wafted to Philadelphia³ from some distant pine-forest so recently as the 16th of March, 1883. It caused such a thick deposit as to lead ignorant people to take it for brimstone. These facts are sufficient to show that the influence of pollen may be experienced under circumstances where it would not generally be looked for.

The phenomena of hay asthma, though their origin may be different, are, like those of asthma in general, of a neurotic type, and it would appear that in some cases hay fever has been of what Dr. Carpenter calls an "ideo-motor" character. One possible example of this kind has come under my notice. Some years ago I saw a young lady, who in-

¹ "Journal of Researches," &c. London, 1845, 2nd ed. p. 5.

² "The Effects of Cross and Self-Fertilisation in the Vegetable Kingdom." London, 1876, p. 405.

³ "Philadelphia Med. News," April 7, 1883.

formed me that she was so subject to hay fever that she invariably remained in London till after the hay was got in. On one occasion, however, after a visit to the Royal Academy, where she had been much struck by a highly realistic hay-field of Mr. Vicat Cole, she had a severe attack of her familiar complaint.¹ Whether this proves that Mr. Vicat Cole can rival Zeuxis² in the absolute *truth* of his art, or whether the case is to be explained by the young lady having passed a hay-cart on her way home, I do not pretend to decide; but the latter solution, if more prosaic, is also, it must be confessed, more probable.

The *symptoms* of the disease are seen under two well-marked types, the catarrhal and the asthmatic. In the former the onset is very sudden, the patient becoming conscious of an itching, smarting sensation in the nose and eyes, and sometimes in the fauces and roof of the mouth. Not unfrequently the attack commences with a feeling of extreme irritation at the inner canthi.³ Paroxysms of sneezing, often of extreme violence, quickly ensue, followed by an abundant thin discharge from the nose. The mucous membrane of the nasal fossæ swells so as to block up the passages and make respiration through them impossible.

¹ See also a remarkable case of rose cold produced by the presence of an artificial rose, and by various other psychical, as well as many physical, causes (page 94).

² As is well known, this artist painted a bunch of grapes, and when the picture was exposed, birds came and pecked at the counterfeit presentment of the fruit.

³ When the disease is established, the sneezing sometimes appears to be brought on by other causes than pollen. The late Rev. Henry Ward Beecher thus describes the extension of the symptoms from the first irritation of the eyes:—"The nose sympathises. Your handkerchief suddenly becomes the most important object in life. By the next day the slightest draught of wind sets you to sneezing. It is a revelation. You never before even suspected what it really was to sneeze. If the door is open, you sneeze. If a pane of glass is gone, you sneeze. If a little dust of the carpet, or the odour of flowers is wafted to you, or the smell of smoke, you incontinently sneeze. If you sneeze once, you sneeze twenty times. It is a riot of sneezes. First a single one, like a leader in a flock of sheep, bolts over; and then, in spite of all you can do, the whole flock, fifty by count, come dashing over, in twos, in fives, in bunches of twenty."

At the same time, there is profuse lachrymation with much pricking and stinging of the conjunctival surfaces, and sometimes photophobia. There is often a certain amount of chemosis, and occasionally the eyelids become puffed so as almost to close the eyes. The discharge from both nose and eyes gradually grows thicker, sometimes even becoming semi-purulent in character. There may be severe neuralgic pain in the eyeballs and over the back of the head. Now and then there is some degree of pyrexia, but this is by no means the rule. The disorder often varies considerably in intensity, even in the same person, within short intervals of time, so as almost to give an intermittent character to the complaint. This is probably due to the varying quantity of pollen present in the atmosphere, the severity of the disease being, as a rule, in direct proportion to the abundance of the *materies morbi*. An attack lasts from a few hours to several days, or even longer, finally ceasing almost as suddenly as it set in, and leaving little or no trace of its presence either in local lesion or systemic disturbance. In some patients hay fever is accompanied by nettle-rash.

The asthmatic form of the complaint may be superadded to the disorder just described, or it may constitute the entire affection. It generally comes on in the daytime, and the paroxysm may pass off in a few hours, the patient first expectorating a little ropy mucus, and later an abundant frothy secretion, or the dyspnoea may continue, with only slight remissions, as long as the sufferer is exposed to the influence of pollen. The attacks seldom produce any emphysema, and the patient sooner or later entirely recovers.

The *diagnosis* of hay fever, from common catarrh on the one hand and spasmodic asthma on the other, is not always easy, and mistakes in diagnosis were formerly very common; but the disease is now so much better known that errors are less likely to occur. The first attack might perhaps be confounded with ordinary coryza; but the suddenness of the

onset, the characteristic œdematous puffiness of the eyelids, together with the absence of constitutional symptoms, will speedily lead to a truer diagnosis. People who are prone to catarrh are very apt to catch cold in the changeable weather of the spring and early summer of this country, and these cases are sometimes mistaken for hay fever; but the readiness with which they yield to anti-catarrhal treatment at once shows their real nature.

Hay fever may attack those who suffer from chronic rhinitis, hypertrophy of the turbinated bodies, or other slight structural disease of the nasal passages; but in the typical examples of true hay fever the interior of the nose is, according to my experience, as already stated, quite healthy.

Persons with slight chronic disease of the nose are, however, apt to suffer from exacerbations in the spring and summer, owing to exposure to dust, strong sunlight, or other irritants. Of course, such individuals may be affected by pollen; but such cases are not examples of true hay fever, though they are sometimes erroneously included in that category. There are also many people who readily take a slight cold in summer, and who, after sneezing a few times, fancy they have the "seasonable complaint";¹ but such cases are, of course, excluded. Another set of cases to be eliminated are those in which catarrhal symptoms are developed as the result of an idiosyncrasy other than that of hay fever.

Thus, it is well known that powdered ipecacuanha will in some persons cause a peculiar form of asthma closely resembling hay asthma, and with many people the fumes of burning sulphur have the same effect. I have frequently observed slight attacks resembling hay fever produced by the insuf-

¹ A lady once seriously complained to me that "the few who really have hay fever suffer from want of sympathy through the many professing to have it, whose ailment is very trifling by comparison."

flation into the larynx of powdered lycopodium, and, indeed, I have for this reason been compelled to give up the use of this drug as a diluent for medicinal powders. Some people experience symptoms somewhat analogous to those of hay fever in eating peaches,¹ whilst others are troubled in the same way by the presence of cats, rabbits, and guinea-pigs; and Dr. Bastian² suffered from an affection closely resembling hay fever whilst he was dissecting the *Ascaris megalocephala*, a parasite which infests the horse. If the specific exciting influence is in operation on a person having an idiosyncrasy of this kind, a complaint almost precisely similar to hay fever is produced; but, as a rule, the conditions leading to its manifestation are exactly known by the patient, and can, therefore, be avoided.

The asthmatic form of hay fever may, in some instances, be less easy to recognise than the catarrhal; but the history of the case will generally guide the practitioner to a correct conclusion. The fact that hay fever comes on, as a rule, in the daytime, out of doors, and in the summer, whilst, on the other hand, paroxysms of true asthma most frequently occur in the evening or night, indoors, and in one of the other seasons of the year, may help to differentiate the two complaints.

The *prognosis* is in all cases favourable as regards the termination of each attack; *cessante causâ, cessat effectus*. When the season of flowering grass is past, the complaint will certainly depart; but it will almost as surely reappear whenever the patient is again exposed to the action of pollen, unless some preventive treatment is adopted.

Hay fever leaves no permanent structural lesion behind

¹ In connexion with this observation it may be mentioned that Dr. Marsh (loc. cit. p. 16) has found pollen accidentally lodged in the velvety skin of the peach, a circumstance which may explain the "peach cold" occasionally noticed in America.

² "Philosophical Transactions," vol. cvi. 1866.

it, and cannot, therefore, be said to have any *pathology*. Blackley thinks that pollen has a peculiar and specific effect in causing dilatation of the capillaries and exudation of serum from them; but it appears to me highly doubtful whether this is anything more than the reaction which ordinarily follows the application of an irritant.

It need scarcely be said that zealous *bacteriomaniacs* have sought for parasitic germs in the nasal secretions of those subject to hay fever; but, although bodies resembling pollen corpuscles have been found,¹ no specific organisms have, so far as I am aware, been detected. It is almost a comfort in these days to find one disease for which the ubiquitous bacillus does not appear to be responsible.

The *treatment* of hay-fever may be either *curative* or *palliative*, and must be directed to the parts attacked, which may be either the eyes, the nose, or the air passages. The two former nearly always suffer, the latter fortunately frequently escape.

For the relief of the *irritation of the eyes*, frequent bathing with very cold water is sometimes useful, though Roberts² appears to have found more benefit from warm and slightly salt water. Sulphate of copper (gr. ij. ad ʒj.) or sulphate of zinc (gr. ij. ad ʒj.) may sometimes do good, but I have found a lotion containing two grains of acetate of lead with two drops of dilute acetic acid in an ounce of water, the most soothing application. Sedative collyria occasionally allay the irritation; for this purpose a small quantity of a solution of acetate of morphia (gr. i. to iij. ad ʒj.) may be dropped into the eyes when they begin to itch. A spray of cocaine, 4 or 6 per cent. solution, always gives immediate relief, but it generally has to be repeated after a short interval.

If a patient is obliged to go out of doors, he should, if possible, avoid the middle of the day, when the glare of the

¹ "Brit. Med. Journ.," vol. ii. p. 18. 1881.

² "New York Med. Gaz." Oct. 8, 1870.

sun greatly aggravates the sufferings of those whose eyes have been inflamed by the pollen dust. If compelled to be in the open air at such times, the patient should protect his eyes by wearing spectacles with large frames, accurately adapted to the circumference of the orbits; or he may find some advantage in wearing a hat with a very broad brim.

When obliged to ride or drive it is advantageous to wear a veil over the face. One made of "three ply" of fine silk gauze has been recommended,¹ but I have found a "double gossamer" veil, which can be had in several colours, answer the purpose in some cases. Protected in this way, many people predisposed to hay fever escape altogether, whilst others only contract the disease in a very mild form.

The nose is the organ mainly to be considered in the local treatment of hay fever. In the ordinary uncomplicated cases the use of a cocaine spray, 4 to 6 per cent. solution, or stronger if necessary, and the passage daily of a nasal bougie² will be found to give great relief. The instrument first used should be a No. 3 or No. 4, according to the amount of swelling in the nose, but gradually, as the passage widens, larger ones up to No. 6 or No. 7 may be employed. The nose should be first sprayed with a 10 per cent. solution of cocaine, about four sprays being used for each nostril. The bougie having been smeared with vaseline, cold cream, or oil should be passed directly backwards, the patient being warned against directing it upwards or outwards. For the first two or three days the bougie should be left in the nasal passage for ten minutes, later on it may be allowed to stop in the nose for fifteen minutes, and at the end of a month it should remain *in situ* for half an hour, or even longer. It is very important in passing bougies not to use any force, as the least violence is sure to give rise to local inflammation and thus retard the

¹ "Brit. Med. Journ.," June 30, 1883.

² See Author's "Diseases of the Throat and Nose." Churchill, 1884, vol. ii., p. 254 *et seq.*

cure. Medicated bougies sometimes do good. But in other cases they cause a very abundant and troublesome secretion. Last summer (1886) several of my patients derived much benefit from a bougie of which the following is the formula :—Gelato glycerine, 40 grains ; hydrochlorate of cocaine, $\frac{1}{10}$ of a grain ; sulphate of atropine, $\frac{1}{125}$ of a grain.

In a few cases I have known bougies of bismuth and acetate of lead (Throat Hospital Pharmacopœia) do good ; but they occasionally aggravate the mischief they are meant to cure.

In nearly all cases warm alkaline washes of borax and bicarbonate of soda give great relief. The upper lip and the margins of the nostrils should be smeared over with benzoated zinc ointment two or three times a day when those parts are inflamed ; or aconite liniment¹ may be used in the same way.

The veil recommended for the eyes also protects the nose ; but as many patients, especially men, object to wear a veil, the entrance to the nose may be guarded by the use of a little cotton-wool or wadding, which can be simply inserted with the finger or more securely by means of one of Gottstein's screws.

I have not found injections of quinine, as recommended by Helmholtz, at all useful. Though in a few cases benefit was derived, in most instances no effect was produced, whilst some patients were actually made worse. The good effect is probably to be explained by the injection washing away the *corpus delicti* mechanically rather than by any parasiticide action. The same remark may apply to the case in which Binz² states that a solution of one part of salicylic acid to one thousand of water, thrown into the nares, cut short the disease. The Vapor Benzoini of the Throat Hospital Pharmacopœia has

¹ Ringer: "Handbook of Therapeutics," p. 288. London, 1880, 8th ed.

² "Deutsche Med. Wochenschr.," Sept. 22, 1877.

occasionally produced a soothing effect, and I have also seen good results from insufflations into the nose of a powder consisting of one-sixteenth of a grain of morphia and one grain of bismuth. This should be applied several times a day. Ferrier's snuff may be substituted for the above formula, but it should be applied by insufflation. Habitual snuff-taking, by deadening the sensibility of the nasal mucous membrane, renders people less liable to common catarrh, and I have heard that this habit affords some protection against hay fever. Tobacco-smoke, also, sometimes gives relief, and I know of one case in which a patient, who was advised to smoke on account of another complaint, was entirely cured of his hay fever by means of this pleasant remedy. I believe, however, that this is a somewhat exceptional case, and I have known several instances in which the affection was much aggravated by tobacco-smoke. It is also said¹ that great advantage has been derived from the snuffing of pure salicylic acid, ten or fifteen grains being used in this manner in the course of the day. As, however, this powder is highly irritating to the mucous membrane, I am inclined to believe that most persons would consider the remedy worse than the disease.

In some cases more active treatment is required. As has already been said, Cazenave was the first to cauterize the mucous membrane of the nose by way of lessening its susceptibility to hay fever, using nitrate of silver for the purpose. In 1881 Dr. Sajous employed glacial acetic acid with the same view, and in 1883 he was able to report that this treatment had met with a considerable measure of success.² It is worthy of note that Dr. Sajous applied the caustic in the first instance for hypertrophy of the turbinated bodies

¹ "Brit. Med. Journ.," vol. ii. p. 101. 1878.

² "Med. and Surg. Reporter," Dec. 22, 1883. In a private communication to the Author dated July 23rd, 1884, Dr. Sajous says: "Since the paper was written, I have treated over twenty cases *without one failure*."

and it was only on finding that he thereby prevented hay-fever in two patients who were subject to that complaint that he was led to apply the method directly for the relief, or rather the neutralisation, of the pollen idiosyncrasy. There is no mention of intrinsic disease of the nose in his other cases. Of course, if there is much hypertrophied tissue, it should be destroyed or removed. I have found that the indurated parts can be most easily got rid of by means of electric cautery, and the same observation applies if any portions of the mucous membrane are found to be exceptionally sensitive. This will be ascertained by touching the various parts, especially the anterior and posterior extremities of the inferior and middle turbinated bodies and different parts of the septum, with a nasal probe. It will sometimes be found that touching *certain spots* will immediately give rise to sneezing, whilst the probe may be passed over large tracts without causing a sneeze. When found these spots must be freely cauterised, but in my experience their presence is the exception, not the rule. Of course, before using electric cautery the nose should be thoroughly sprayed with cocaine, which should be applied not merely to the part that is to be burnt, but, as already observed, to the whole of the interior of the nose.

For the relief of the respiratory symptoms we are able to do much; for the *cure* unfortunately very little.

Patients suffering from hay fever are often relieved by inhaling the fumes of nitrated blotting paper, the good effect of which is further increased by steeping the paper in a solution of stramonium, datura tatula, belladonna, or lobelia. A patent American remedy, consisting of nitrate of potash and powdered herbs, of which stramonium or datura tatula is probably the most important, is sold under the name of "Himrod's Cure,"¹ and when this powder is

¹ The original formula of this remedy has recently been published in the "Chemist and Druggist" (December, 1883). It is said to consist of stramonium, lobelia inflata, black tea, and nitre in equal parts. If a little powdered aniseed

lighted and the fumes inhaled, they sometimes quickly relieve the spasm. Cigarettes of pure stramonium¹ are also often of great service.

If from any cause the patient is unable to try more radical measures, *palliative* steps should be taken. Some of these have been already incidentally mentioned, and others (such as the constitutional remedies) should be adopted even when active local measures are being carried out.

The first measure must be to remove the patient from a district in which there is much flowering grass. A sea-voyage is probably the most perfectly satisfactory step that can be taken. Patients who are unable to go to sea should endeavour to reside on the coast, where they will generally be free from their troublesome complaint, except when land-breezes blow. Dwellers in towns should avoid the country, and those who reside in the country should make a temporary stay in the centre of a large town. It often happens, however, that such a change of abode is not practicable, and under such circumstances, if the complaint is very severe, the patient should, if possible, remain indoors during the whole of the hay season. There are many persons, of course, however, who cannot stay in the house during the month or six weeks of the hay fever period; and those who can are apt to find such detention not only exceedingly irksome but very injurious to the general health. Active exercise in the country should, however, be carefully avoided, for it must be borne in mind that the energy of the respiratory function bears a direct relation

or fennel be added to this preparation, it certainly produces a compound which in appearance and effect is very similar to Himrod's remedy. Careful microscopical examination made at my request by those familiar with vegetable structures has, however, failed to detect any tea-leaf in Himrod's preparation, though, of course, it is readily seen in specimens of powder prepared according to the formula just given. On the other hand, bearing in mind the fact mentioned in the text, that tea when drunk often gives great relief to asthmatics, it is not at all improbable that the herb may have some effect, if burned and inhaled.

¹ The best cigarettes of this kind are made by Messrs. Bullock, 3, Hanover Street, Hanover Square.

to the activity of the body, and that when the breathing is frequent and deep, a far larger quantity of pollen will be inspired than when respiration is more passively performed.¹

As the affection most commonly occurs in persons of nervous temperament, nerve-tonics and other constitutional remedies have been used for the purpose of warding off hay fever, or controlling the violence of its attacks. Among these, quinine, arsenic, opium, and belladonna have been employed, but I have found valerianate of zinc, in combination with assafoetida, more valuable than any other drug. I usually give the remedy in the form of pills containing one grain of valerianate of zinc, and two grains of the compound assafoetida pill, doubling the dose at the end of ten days or a fortnight. I direct my patients to begin taking these pills as the hay season approaches, and, under the use of this remedy, many persons who formerly suffered most severely from hay fever have ceased to be troubled with it.

When the disease is established, tincture of opium is of great benefit in controlling hay asthma, reducing the secretion, diminishing the sneezing, and at the same time bracing up the nervous system. It should be given in small doses of five or seven drops twice daily, and a saline purgative should be taken on alternate mornings. Belladonna will be found useful, more especially in those cases in which there is irritation of the uvula and roof of the mouth. Dr. T. H. Moorhead,² who had been a regular sufferer for thirty years, states that he succeeded in curing himself by means of

¹ The popular games of cricket and lawn-tennis offer conditions very favourable to the development of the complaint in those who possess the idiosyncrasy, owing to their being played out of doors, and requiring a good deal of running about. Napoleon is said to have attributed his defeat at Leipzig to his having eaten, not wisely, but too well, of his favourite dish, shoulder of mutton and onions; in like manner (*si parva licet componere magnis*) the victory has sometimes been decided in the cricket-field, in a contest between the rival "blues," by the inopportune sternutation of some doughty champion, whose nerves are as adamant against everything but pollen.

² "Brit. Med. Journ.," vol. ii. p. 18. 1886.

hypodermic injections containing one-twentieth of a grain of morphine and one-two-hundredth of a grain of atropine night and morning.

In hay fever the food should be nutritious and easily digestible. Owing to the depression which the complaint causes, stimulants are sometimes necessary; but they should, if possible, be avoided, or only taken in small quantities. Light claret or hock, or whisky diluted with water are the least injurious. Tea and coffee are extremely useful in the asthmatic form of the disease, both in relieving the spasm and counteracting the exhaustion which follows it.

In conclusion, it may be stated that a considerable number of cases of hay fever can be cured, whilst a still larger number can be relieved altogether for the time, though they may be subject to subsequent attacks. In all cases, if the directions which have been given in this little treatise are carefully followed, the troubles of the affection will be found to be so minimised that the quondam sufferers will have comparatively little to complain of, and certainly will no longer dread the "gracious odours" carried

"Upon the gentle wing of some calm-breathing wind."

PAROXYSMAL SNEEZING.

INTRODUCTION.

SNEEZING is, after all, only a *symptom*, and there are, no doubt, many objections to the consideration of it as a disease *per se*. On the other hand, however, it has been found convenient, in many other cases, to discuss a number of morbid conditions under the head of a prominent symptom. Indigestion, neuralgia, and epistaxis, are each only a symptom of ailments often due to highly complex conditions, but, nevertheless, under each of the terms referred to, much valuable information has been collected, and arranged so that under one prominent symptom all the possible causes of disease giving rise to it, and every kind of suitable treatment, can be carefully passed in review.

The act of sneezing is not always even a symptom of disease ; it is frequently merely a healthy recognition of an atmospheric impression, and, in moderation, is generally admitted to be a very pleasurable sensation. When, however, the attacks are very frequent, and at the same time prolonged, it becomes an exceedingly distressing complaint, and most depressing to the nervous system.¹ Indeed, when any extensive atheromatous degeneration affects the vascular system, or when there is any weakness of the abdominal

¹ Borbone ("Journal of Laryngology and Rhinology," vol. i. No. 1, p. 11. January, 1887) has described a case of spasmodic sneezing in which the expiratory act was so rapid and continuous that the patient became cyanosed and collapsed, and ultimately fainted.

walls, habitual and violent sneezing becomes a source of danger.

Before pathology was studied in a scientific spirit, and when signs and portents of untold significance were found in the simplest occurrences of every-day life, special importance was naturally attached to the outward and visible signs of disease, and, in the absence of any knowledge of the causes of phenomena, no rational interpretation of them was possible. Under these circumstances, it was inevitable that superstition, which is never far from the mind of man when reason gives no light to guide him, should lay hold of these manifestations and read the "writing on the wall" in its own absurd way. Amongst other things, the act of sneezing was thought to have something supernatural about it in nearly every country from the earliest period. In the olden times, sneezing was generally considered a good omen. It was looked upon as something sacred by nearly all the ancient peoples,—not only by the Greeks and Romans, but by the races of Asia and Africa, and even by the Mexicans of remote times. This feeling of reverence was already ancient even in the days of Homer. Aristotle inquires into the nature and origin of the superstition, somewhat profanely wondering why sneezing had been deified rather than coughing. Xenophon says that when any one sneezed in the presence of the King of Persia everyone fell down and worshipped him as a god. Sir Thomas Browne¹ remarks, "We read in Godignus that upon a sneeze of the Emperor of Monomotapa² there passed acclamation successively through the city." Sneezing is said by Thucydides to have been a very bad sign in the famous plague of Athens, and some have fancied that the superstitious reverence for it arose from that circumstance. This, however, is a mistake, for, as already remarked, the

¹ "Vulgar Errours."

² A region of Africa, supposed, in the sixteenth century, to be the seat of a great and powerful empire.

custom can be traced back to a period long antecedent to the Greeks.

The feeling about a sneeze seems to have been with some persons one of fear, so that the salute to the sneezer may be taken to mean a prayer for his safety. The Greeks wished each other long life when they sneezed, whilst the sneezer himself addressed a prayer to Zeus for his safety. This gives point to the epigram of Ammianus, in which he "chaffs" a man for omitting to utter a pious ejaculation when he sneezed, his highly-developed nasal organ being, it is hinted, too far off for his ears to catch the sound which it produced. The Romans said *Salve*, and modern peoples use various formulæ to the same effect. In Catholic countries it used generally to be supposed that devils were expelled by sneezing; possibly this may be why snuff was traditionally held in such reverence by theologians, some of whom, however, were partial to it on the more matter-of-fact ground that it caused a *purgamentum cerebri*, and made the brain more capable of dealing with such knotty questions as *utrum chimæra bombylians in vacuo possit comedere secundas intentiones*. Sneezing, however, was often regarded both as favourable to the bodily health and as a sign of good fortune.

Why so simple a thing should have been credited with such momentous consequences, it is impossible to say, but it is easy to see how it might have come to be looked upon (*pace* the Stagyrte) as something different from other reflex acts connected with the air-passages. It is usually the first sign of life given by what Oliver Wendell Holmes calls the "youthful candidate for immortality" all over the earth on first emerging into the light of day, and hence a special sacredness may easily have been thought to attach to it, and I suppose the music of the spheres would sound less melodious to the ear of a young mother in the throes of childbed than the sneeze with which

her babe announces his safe arrival. So important has the subject been thought that learned men¹ have written elaborate treatises on sneezing and the salutations proper on the occasion. Pliny tells us that it was a civility in use in his day ("*sternutamentis salutamur*"). The custom is also referred to by Apuleius² in one of his most comic and naturalistic passages, and several other writers of that period have referred to it. The Romans especially thought sneezing a happy augury. They used to say of a pretty girl that the loves had *sneezed* at her birth (*i.e.*, the good fairies had smiled on her cradle), and in general it was a sign of good luck. Dryden says:—

“To thee Cupid *sneezed* aloud, and every lucky omen sent before
To meet thee landing on the Spartan shore.”

It seems to have been of specially good significance in love affairs. Thus Parthenis, when writing to her lover (probably in leap-year, since it was to make a declaration to the gentleman), *sneezed*. This comforted her, and she took it as a favourable answer to her letter. Hay fever would, under such a consoling belief, be not without its compensating advantages for many a fair and blushing maid,—if there are any blushes still left in this advanced age. In later times sneezing was considered good for the health. Milton, speaking of a

¹ Father Strada, Schooterius, Morin (in the “Hist. de l’Académie des Inscriptions”), &c.

² A “frisky matron,” interrupted in an interesting *tête-à-tête* by the unexpected return of her lord, concealed the “gay Lothario” in a wickerwork structure on which the family linen was spread out to bleach. As the ancients seem to have used sulphur for this purpose, the hiding-place was not a comfortable one for the captive “masher.” The acrid vapour made him sneeze again and again (“*crebras ei sternutationes commovebat*”). The author goes on to say:—“Atque ut primum e regione mulieris pone tergum ejus maritus acceperat sonum sternutationis quod enim putaret ab eâ profectum, *solito sermone salutem ei fuerat imprecatus et iterato rursum et frequentato sapius.*” At last, there being no lull in what Johnson might have called the tempest of sternutation, the husband’s suspicions were aroused, and the victim of “paroxysmal sneezing” was discovered. *Tableau!* (Apuleius, “*Metamorphoseon*,” lib. ix.)

tremendous convulsion of nature, says it is merely a little healthy shaking, over in a moment, and of no ill effect :—

“ As wholesome as a sneeze
To man’s less universe.”

Etiology and Pathology.—Before proceeding to investigate the causes of sneezing, the mechanism of the act itself must be analysed. Sneezing must be regarded as a reflex respiratory act ; an impression is made on the extremities of the terminal twigs of the nasal branches of the fifth nerve, which is conveyed to the respiratory centre in the medulla, and results, after two or three short quick inspirations, in a violent expiration. The air, instead of being directed through the mouth, is, by the closure of the back of the throat or isthmus of the fauces, directed through the nose. This closure of the fauces is effected by the drawing inwards (towards the median line) of the anterior pillars, the falling of the uvula and soft palate, and the elevation of the back of the tongue. Of course the act, as in the case of other reflex acts, is entirely involuntary. The violent act of expiration through the nose causes a large quantity of secretion to be expelled. Whether the erectile tissue of the nose takes an important part in the act of sneezing or not, has not been positively determined. Many observers think that the act of sneezing does not take place until the cavernous tissue of the nose has been first filled with blood, and that it is the pressure of the blood on the terminal twigs of the nerves which causes the reflex act of expiration. There seems to be an unnecessary elaboration about this view. In other cases we do not find reflex acts requiring any such supplementary assistance. It is found quite sufficient to excite the extremity of any afferent nerve in order to produce a reflex act. If the fauces are tickled, retching takes place ; if the conjunctiva is touched, the eyelids twitch without the necessity of any erectile tissue. Hence it would seem that active participation of this structure is not necessary to produce sneezing. If any

change in this tissue takes place, it is therefore probably only of a correlated nature, the vaso-motor centre being in close relation with the respiratory centre, and commonly acting with it. The question is one which it is difficult to decide by observation, as the opportunity does not often present itself of carefully examining the interior of the nose in the short interval between the irritation experienced in that organ and the act of sneezing. Even if swelling of the turbinated bodies takes place, it may occur as the *result* of the strong act of expiration through the nose. The principal argument in favour of the erection of these bodies is the large amount of fluid which is frequently poured forth in the act of sneezing. The thin mucous membrane covering the tissues will, no doubt, readily permit a large quantity of the watery element of the blood to be extruded, and it is questionable whether, by the mere act of sneezing, a quantity of fluid equal in amount to that commonly observed, could be obtained from the vessels of the glandulæ of the mucous membrane, even if active hyperæmia existed. On the whole, therefore, the evidence favours the theory of the activity of the cavernous structure as a correlative, but not a causal, condition. The nervous arrangement by which the act of sneezing takes place in health is probably as follows:—An impression is made on the sentient extremities of the nasal nerves derived from the superior branch of the fifth nerve which, passing along this nerve to the “centre of sneezing,”¹—that is, to some portion of the so-called respiratory centre which is in close relation to that of the vaso-motor system—spreads to it, the

¹ It is not certain whether the acts of sneezing and coughing have distinct centres in the area of the respiratory centre, or whether the respiratory centre itself acts in a peculiar and unusual manner when governing sneezing, coughing, and other processes not included in the ordinary routine of respiration. It is scarcely necessary to point out that the great difficulty in arriving at definite conclusions in the matter is owing to the extremely vital character of the respiratory centre; any experiments performed with a view of determining the question being calculated to cause the immediate death of the animal operated on.

result being that two efferent nerve currents are started, one belonging to the cerebro-spinal system, the other to the vaso-motor. The former, which is highly complex and radiates in various directions, leads the expiratory muscles to act violently and close the *isthmus faucium*; whilst the vaso-motor current, inhibiting the ordinary tension of the minute arteries and allowing dilatation and vascular engorgement,¹ causes the temporary swelling of the turbinated bodies, and thus provides the large amount of fluid which issues in the act of sneezing. Although nearly all branches from the fifth nerve which go to the turbinated bodies pass through Meckel's ganglion, it is not necessary to discuss the action of the sympathetic ganglia, as there is not the slightest evidence that any of these bodies possess any active function except those of a nutritive character. The way in which some recent writers have assumed that these little bodies are centres of reflex action is, indeed, remarkable, and the theories which they have elaborated are highly ingenious, but there is one drawback to them, viz., that they are absolutely opposed to the present state of physiological knowledge.²

¹ It is possible, however, that the original impression on the nerve extremity may have started two currents, one going to the respiratory centre, the other to the vaso-motor system. This would imply a double reflex action, which is scarcely probable when the irritation arises in the nose itself. When, however, the impression starts from the skin—*i.e.*, when a cold draught of air strikes the head, or when the feet become cold, there is a double reflex action, the vaso-motor action preceding the cerebro-spinal.

² Michael Foster remarks: "Seeing that in the spinal cord the nerve cells are undoubtedly the central structures concerned in the production of reflex action, it is only natural to infer that the nerve cells of the sporadic ganglia possess similar functions. Yet the evidence of this is at present of *very limited extent*. With regard to the ganglia on the posterior roots of the spinal nerves, all the evidence goes to show that these possess *no power whatever of reflex action*." ("Text Book of Physiology," 4th edition, p. 112). The most recent investigator and the highest authority on the functions of the ganglia is Dr. W. H. Gaskell, F.R.S. This physiologist writes as follows: "*The origin of all vaso-motor nerves is to be found in the central nervous system . . . such nerves leave the spinal cord in the anterior roots, from which they pass to the sympathetic system*" . . . "I picture to myself, the anatomical arrangements of these visceral nerves somewhat as follows. Each nerve fibre leaves the central nervous system as a fine

The healthy act of sneezing having been explained, it remains to say a few words on its perversion or exaggeration. This may be due to one of three causes, or to two or all in combination. First, it may be due to structural changes in the tissues of the nose whether of an evanescent nature, such as mere congestion, or of a more permanent character, as in the case of chronic thickening of the turbinated bodies. It is obvious that any swellings, such as polypus or adenoid growths, would be likely to cause pressure on the peripheral extremities of the nerve. Secondly, the sentient nerves of the nose may become hypersensitive from changes in their own structure, whether inflammatory or otherwise, or, perhaps, from the mere fact of being too *frequently*¹ stimulated. Or the nerves of an individual may possess a special sensibility, which does not exist in the majority of people, to certain impressions, as in the case of hay fever. Thirdly, the nerve centre in the medulla may become so irritable that the slightest impression will set it in action, or that it may operate of its own accord or from ideal impression without any stimulation through a nerve branch.

medullated nerve fibre which passes directly into its appropriate ganglion, and there in consequence of communication with one or more of the ganglion cells loses its medulla and passes out not as a single non-medullated fibre, but as a group of non-medullated fibres. Such ganglion cells not only assist in the conversion of a single nerve fibre into a group of fibres ; but at the same time are centres for the members of the group, *in so far that they possess a nutritive power over them* ; they are not, however, centres in the sense of being capable of reflexly setting these fibres into activity ; a conclusion which is self-evident if each nerve cell is connected only with nerve fibres possessing the same function. The extension of the nutritive power of the ganglion over the nerve fibres which proceed from it to the end organs of those nerve fibres, *i.e.*, the tissues which they supply, would go far to explain the beneficial effect upon the tissues, such as the recovery of tone which has been often supposed to depend upon the continuance of the connection between the tissue and one or other group of ganglion cells ; while at the same time *the impossibility of any reflex action taking place through them* prevents them from supplying the place of the central nervous system when no longer in connection with that system." ("The Journal of Physiology," vol. vii. p. 35). (The various italics in these passages are not in the original.)

¹ Too *violent* stimulation would have an opposite effect, as is seen in the case of snuff-takers.

1. The most common condition giving rise to a change of tissue which may cause pressure on the nerve extremity is "*a cold in the head*," and sneezing is also one of the first symptoms of that daily occurrence. Some of those who are subject to colds look upon a fit of sneezing as a danger signal, and take immediate steps to oppose the enemy with their favourite nostrum ; others at once haul down their colours and resign themselves with more or less equanimity to their fate. In cases of common cold, when the attack of sneezing first comes on, the lining membrane appears congested, *i.e.*, the mucous membrane is seen to be very red. Half-an-hour after the sneezing has subsided, however, the tissues may either have resumed their normal colour or a swelling may have taken place in the cavernous structure¹ of the nose. If this swelling persists, sneezing generally occurs for a time in paroxysms of greater or less violence. In common cold, however, sneezing is only a transient symptom and need not further detain us.

Chronic cold in the head is a fertile source of sneezing in the case of adults, children who suffer from habitual coryza not being, as a rule, troubled with this symptom, at least not to any serious extent. In children who frequently have catarrh the changes which take place in the interior of the nose are generally of a purely atrophic character. Chronic colds cause sneezing up to the middle period of life, but after the grand climacteric the reflex act is greatly diminished both as regards intensity and frequency.

In chronic catarrh of the nose the mucous membrane and erectile tissue of the turbinated bodies are generally found red and swollen and not unfrequently the lining membrane of the septum is hypertrophied and inflamed ; occasionally there is so much general swelling that one or both nasal passages are completely occluded. Sometimes there is no apparent swelling, the normal contour of the turbinated bodies in such cases being plainly visible, though at certain spots, especially

¹ See page 36.

at the anterior extremity of the middle turbinated body, the mucous membrane may be seen to be of a bright red colour.

Polypus in the nose sometimes, though not very often, gives rise to attacks of sneezing, and the same may be said of warty and *adenoid growths*. In the active stage of *enchondromata* and bony *outgrowths*, sneezing is sometimes a symptom.

2. That the extremities of the nerves may become morbidly sensitive is highly probable, but I am not aware that there is any proof that this condition exists. The observation of disease in general, however, makes such an occurrence highly probable. Hyperæsthesia of the sentient nerves in different parts of the body is a matter of familiar observation, the increased sensibility probably often depending on structural changes, most likely of an inflammatory character, in the nerve-sheath. The special sensibility of the nerves of the nose in certain individuals to particular impressions, which has been seen in hay fever where pollen is the excitant, has been sufficiently dwelt on in the previous section of this work. It has also been shown, in dealing with that subject, that there are other substances besides the pollen of grasses which have a special power of exciting reflex acts through the nasal nerves in certain individuals.

3. In habitual sneezers, when there is no evidence of structural disease in the nose, and most likely also when there is such disease in that organ, the nerve centre is probably always in a state of exaltation. These persons possess the so-called *nervous temperament*; they are active both physically and mentally, often to an almost morbid degree. In an interesting lecture recently delivered¹ by Dr. Norris Wolfenden, at the Throat Hospital, he observes:—"If you dismiss from your minds much of the theory concerning the vaso-motor system, the power of isolated ganglia to become

¹ This lecture will shortly be published.

centres of reflex action, the individuality of the so-called sympathetic as distinguished from the cerebro-spinal system, and most of the erroneous physiological pathology founded upon these views, you will have a clearer idea of the nasal neuroses. In all of them a morbid condition of the central nervous system is one of the essential factors." It has long been noticed that attacks of frequent and prolonged sneezing are most apt to occur in persons of nervous temperament, in whom no doubt all the nerve centres are in a state of much more acute receptivity than in those of phlegmatic temperament. It is also well known that in states of great emotional sensibility sneezing is apt to occur.¹ Medicines which give tone to the nerve centres generally diminish the tendency to paroxysmal sneezing, attacks of which, it may be observed, never occur during sleep or narcosis. From a consideration of these facts, it would appear that, although sneezing may be seldom due in the first instance to central causes, it is likely that irritation, originating in local disturbance, may, after a time, establish an abnormal excitability of the centre, so that afterwards very slight stimulation may be sufficient to cause an explosion. It is very probable that the mere force of physiological or pathological habit, that is to say, the tendency to *periodicity* which has been observed in the human organism, and which is no doubt the cause of so many acts in the so-called lower animals which appear to be based on reason or memory, may operate through the unconscious nerve centres.

The most marked illustrations of periodicity are no doubt seen in morbid conditions, such as neuralgia and ague, but the tendency of the digestive functions to assume a periodic character is well known. Sir Thomas Watson² mentions the case of a French doctor who every evening for a week

¹ Stalpart van der Wiel ("Obs. rarior. med.") reports a highly remarkable case, to which the curious may be referred.

² "Principles and Practice of Physic," 4th ed., vol. i. p. 761.

plunged into the Saone; at the end of that time, at precisely the same hour, whilst sitting in a room, a cold sweat came over his body, and this was quickly followed by a warm glow. Of course, it need scarcely be said that the cold stage corresponded to the plunge in the water, and the hot stage to the reaction which generally follows. This is a good example of periodicity quickly established. That sneezing often depends on the morbid excitability of a centre is shown by the fact that a person who is subject to such paroxysms will often remain for many hours free from an attack when his mind is occupied, whilst when unemployed the attacks may be very frequent. A friend of mine, who at one time suffered very much from sneezing, noticed that he never sneezed when playing at whist; another observed that when spending his "evenings at home" he had frequent attacks of sneezing, but that when dining out with friends he never suffered. The explanation of this is that when there is slight mental excitement other nerve centres become active, and the centre governing the act of sneezing is at rest. In speaking of disease as "central," it must not be supposed that it implies any real disease of the brain; in true cerebral disease, sneezing is very rarely, if ever, met with. Nothnagel,¹ who gives a formidable list of all possible symptoms that may be caused by brain disease, makes no mention of sneezing, nor is such a connexion referred to, so far as I can discover, anywhere in the vast literature of modern neurology.

Symptoms.—Although sneezing itself is only a symptom, the circumstances under which it occurs in a paroxysmal and violent form, as well as the intensity of the attacks, vary greatly. Thus some sufferers can always refer the attack to a definite cause, such as change of temperature either from a

¹ "Topische Diagnostik der Gehirn-Krankheiten." Dr. Althaus, one of the leading authorities in such matters, tells me that he has never seen or heard of a case in which sneezing was caused by disease of the brain.

warm into a cold atmosphere, or *vice versa*. Most victims suffer more when the weather is damp, but I have seen many cases in which a dry east wind was more productive of the attacks. The close and badly ventilated atmosphere found in some theatres and concert-rooms will bring on an attack in certain individuals. Atmospheric conditions indicative of electrical disturbance, as in the case of an approaching storm, will in some people cause violent attacks of sneezing. Where the predisposition exists, an attack frequently occurs on first waking in the morning. In some people the attacks come on regularly night and morning ; in others there seems to be no difference in their susceptibility, either as regards time or season. The following report, furnished me by one of my patients, an excellent public speaker, though better known to the general public as a brilliant writer and journalist, is a good illustration of the eccentricities and obstinacy of the complaint :—

“It is now fully three years since I first suffered from this distressing disorder. ‘Distressing’ is the exact word for it ; it is not painful ; it is not, I believe, dangerous, but it is eminently distressing and disturbing, rendering its victim unpleasant to himself and a nuisance to his friends. At first my attacks were rare and far between : one perhaps every month or six weeks, but they gradually increased in frequency and strength, and now there is scarcely a day without a paroxysm, while the state of discomfort is constant. The disorder is like a perpetual hay fever, an eternal influenza ; it consists of violent sneezing fits more or less frequent, of a stoppage of the nose, which impedes proper articulation, and gives the sufferer the voice and utterance of a comic Jew in an Adelphi melodrama. Sometimes one remains ‘stodged’ and stuffed for hours ; at others there is a perpetual running of thin watery mucus, necessitating the constant use of handkerchiefs. No change of diet affects it ; my living may be free or ascetic, I may drink my usual fair average of wine, or I may confine myself to simple mineral table water ; I may smoke freely, or eschew tobacco altogether, the result is just the same in each case. I have tried change of air without, saving in one instance, the smallest effect. I have lived in London, by the sea, on the river, in the heart of the country ; but, save at Monte Carlo,

without any beneficial result. There, after a few days, the disorder entirely left me, and I was absolutely free from any trouble arising from it. As I journeyed home, it began gradually to re-appear, and since my return it has been worse than ever. I have travelled in Germany, France, and Switzerland, without any amelioration of the complaint.

"I have consulted the most eminent medical authorities at home and abroad. I journeyed specially to Paris and placed myself under the charge of a gentleman, who, on the testimony of four different capable authorities, is the great Continental specialist in such cases. He saw me four times, and then told me that he could do me no good. I have been assured by several eminent creatures that my trouble was merely an eccentric expression of gout; it has been impressed upon me by several other illustrious beings, that it is nothing to do with gout at all, but merely a local disorder.¹ I have been excited and soothed, I have had the outside of my nose rubbed with sedative lotion, and the inside burnt with red hot wire.

"I have taken all kinds of nauseous medicines; my unfortunate nostrils have been invaded by every kind of spray, and soused with every kind of nasal douche.² I have been presented with a gargle with which I was to fill my mouth and to stand on my head and let it run out of my nostrils,—to say the least of it, a humiliating position for an elderly gentleman of considerable weight. An odd feature in the case is, that occasionally, but very rarely, I enjoy perfect freedom for twenty-four hours; and more frequently, when I am in genial company, with the excitement, say, of having a speech to make, I am able to forget my trouble for a time."

Diagnosis.—Neither experience nor skill is required to diagnose an attack of sneezing, which cannot be mistaken for anything else. The circumstances surrounding the act, however, vary greatly, and are of considerable diagnostic value. Thus if a person sneezes only in the early summer, and especially during the time when flowers and grasses are in bloom, there can be little doubt that he is suffering from hay fever, whilst if the sneezing occurs at all times

¹ On explaining to this pleasant but "distressed" author that the affection depended on the "centre" being over-excited, he coolly remarked that he had discovered that his "scenter" was out of order a long time before!

² "I have dusted myself all over, inside and out, with strong snuff."

of the year it is evident that pollen is not the source of irritation. It may be remarked that persons who are subject to attacks of sneezing in the winter very seldom have their sufferings aggravated in the hay season, or in other words, rarely suffer from hay fever. Again, sneezing occurring with change of temperature points to some hypersensitiveness and often to general congestion of the lining membrane of the nose, whilst if the sneezing attacks occur when the patient is in a state of repose, the cause is generally central.

Treatment.—After the description which has been given of paroxysmal sneezing, it need scarcely be said that the treatment must vary according to the nature of the disease which gives rise to the prominent symptoms, although there are certain remedies which may be useful in nearly all cases. *Constitutional treatment* is usually beneficial if the remedies are properly selected. Thus, as already remarked, a large number of patients who suffer from sneezing are of nervous temperament, and even those whose original organisation is not of that type are apt to become neurasthenic if the symptom lasts for any considerable period. Hence medicines which brace the nervous system generally do good.

Remedies which arrest secretion by increasing capillary tension also give relief, and this accounts for the great benefit often derived from opium in small doses taken internally. Here it should be mentioned that when opium is employed as a constitutional remedy the tincture or the extract is much more efficacious than the salts of morphia. Where there is no structural disease nerve-tonics, especially valerianate of zinc, often greatly assist in the cure.

Local treatment is required in nearly all cases. In recent disease, whilst many remedies have a positive value, certain negative measures are of service. One of these consists in not using the handkerchief. The afflicted organ may be wiped but not blown. The avoidance of pungent food or irritating condiments such as mustard, pepper, cayenne, &c.,

also of great importance. Amongst local remedies morphia nsufflations are often of great benefit. An eighth of a grain of acetate of morphia may be mixed with three-eighths of a grain of starch and blown into the nose with the "dwarf insufflator"¹ once or twice daily. Before sneezing has become chronic, cocaine in the form of spray is often very useful. A six per cent. solution is generally sufficiently strong, but, if this does not answer, a ten or even twenty per cent. solution may be employed. Four or five sprays through each nostril are generally sufficient, but the patient should be taught to direct the spray in such a manner that every part of the interior of the nose receives some of the liquid.

When the patient is actually sneezing or about to sneeze, smelling strong ammonia salts often checks the attack. The remedy might, perhaps, be claimed by the homœopaths as acting on the principle of "like cures like." It would seem that the strong impression of the ammonia salts under certain circumstances overcomes the condition which was about to result in a reflex act. Strong ammonia is the basis of the popular remedy known as "Alkaram," which also contains, however, a few drops of carbolic acid and some fine sawdust. The action of the chemical compounds on the sawdust produces the purple colour, and the carbolic acid causes the disagreeable smell of this nostrum.²

Men who suffer from severe paroxysmal sneezing can cure themselves by taking snuff. I have known this remedy cure in a fortnight a case of sixteen months' duration; that is to say, at the end of a fortnight the patient

¹ Sold by Martindale, 10, New Cavendish Street, W.

² The only essential difference between Alkaram and the common mono-carbonate of ammonia of commerce seems to be that one costs fourpence an ounce and the other two and ninepence. Mr. Martindale gives the following formula in his "Extra Pharmacopœia" for salts, which he calls "Anti-Catarrhal." The compound closely resembles Alkaram, but is more agreeable:—Take of absolute phenol, 24, of carbonate of ammonia, 16, of strong solution of ammonia, 44, of oil of lavender, 1½, of camphor, 3 parts, and of pure sawdust, a sufficiency.

ceased to sneeze, but in order fully to establish the cure he was obliged to continue the remedy for three months. If snuff is resorted to, it should be taken frequently, not only, as in the case of smelling-salts, when there is a disposition to sneeze, but at other times also. The more often the patient sneezes during the first week, the more quickly will he be cured. Care should be exercised in first using snuff, as it is apt to cause soreness if pushed to excess at first. It may be remarked also that the snuff should not be sniffed up too violently, as this causes it to be drawn into the pharynx where it may cause some irritation. In all cases, if snuff is used, it is well for the first week or two to gargle the throat frequently with an alkaline gargle (a drachm of bicarbonate of soda in half a tumbler of water). The disadvantage of using snuff is that when the habit has been acquired it is difficult to break it off. In cases of simple congestion, alkaline solutions, bicarbonate and biborate of soda in the form of washes or sprays almost always do good; but if the congestion has led to any considerable swelling, local astringents, such as tannin and rhatany in solution, or in a dry form diluted with starch and blown into the nasal fossæ with an insufflator, are of great service.

In using astringents, the important point to bear in mind is that they should not be used too strong, weak solutions being much more efficacious. When there is chronic thickening to a moderate extent, accompanied with hyperæsthesia, the use of gum-elastic bougies is often beneficial. The mode of using them has already been described in connexion with hay fever (p. 61). If there is any decided thickening of the turbinated bodies, the redundant tissue must be destroyed or removed. For this purpose electric cautery generally answers best, but if the outgrowths are developed to any considerable extent, they may be removed with Jarvis's snare or my wire *écraseur*.¹ In nine cases out of ten, however,

¹ See Author's "Manual," vol. ii. p. 272.

electric cautery will be found to provide the most easily applied and certain remedy. If any "sensitive spots" can be discovered, they should be freely touched with a hot point. Of course in all cases where electric cautery or other painful treatment is adopted, the interior of the nose must be first sprayed with cocaine. Polypi can be removed with wire loops or my punch-forceps.¹ Exostoses of the turbinated bodies can generally be easily broken off, or they can be removed with my bone-forceps.² Spurs from the base of the septum, unless very troublesome, should not be interfered with; they can only be got rid of with the drill. An excellent apparatus, worked by electricity, is now made,³ and is provided with a great variety of drills.

¹ Op. cit., p. 266.

² Op. cit., p. 268.

³ Sold by the Dental Manufacturing Company, Lexington Street, Golden Square.

APPENDIX.

ROSE COLD.

THE existence of a peculiar idiosyncrasy, which makes certain individuals liable to catarrh and asthma from the presence of roses, appears to have been known from the middle of the sixteenth century. In the year 1565, Botallus¹ (known to fame as the discoverer of the *foramen ovale* in the heart) affirmed that he knew persons who held the smell of roses in deadly hatred, because it gave rise to headache, sneezing, and troublesome itching of the nose. Somewhat later, Van Helmont² (1577-1644) mentions the odour of sweet-smelling substances as causing headache, and, in some cases, difficulty of breathing; he also gives³ the case of a canon who was *totâ æstate propemodum asthmaticus, totâque hyeme liber*. It must be allowed, however, that this passage, though suggestive, is not quite conclusive as to the nature of the malady. In 1673 I. N. Binnigerus⁴ says that he had often heard from James à Brun, a professor of the medical faculty in the University of Basle, that his wife, Ursula Falcisin (a lady, as he is careful to inform us, whose charms were of the "too, too solid" kind, *ampli corporis et carnosi*), suffered from coryza for several weeks every year during the rose season.

A few years later we find Ledelius⁵ recounting the case of a merchant of Grünberg who could not smell a rose without immediately suffering from itching, followed by inflammation of the eyes, with profuse lachrymation and headache lasting some days. We come next to a case of especial interest, which was published in 1691 by J. Constant de Rebecque. The passage is important as conveying

¹ "Commentarioli duo, alter de Medici, alter de Ægroti, Munere," p. 23. Lugduni, 1565.

² "Asthma et Tussis," cap. x. (Opera Omnia, p. 344. Hafnæ, 1707).

³ Ibid., cap. xxiv. (Opera Omnia, p. 346).

⁴ "Obs. et Curat. Medicinal. Centuriæ quinque," Cent. Secunda, obs. lxxxvi. p. 227. Montbelgardi, 1673.

⁵ "Miscell. Nat. Curios.," dec. ii. ann. 2, obs. 140, p. 309 (probably 1682). Lipsiæ.

the result of an experienced physician's observation of his own symptoms. He tells us¹ that for thirteen years he had been afflicted with coryza lasting throughout the rose season, and ceasing of itself when that time had passed (*per totum tempus quo rosæ se mihi olfaciendas præbent durat, eoque elapso sponte desinit*). At first he attributed his sufferings to heat, but in the year 1685, when the summer was exceptionally hot and there were hardly any roses on account of caterpillars, he was struck by the fact that his annual disorder did not trouble him. The symptoms came on at once, however, on his inadvertently plucking a rose towards the end of the season. He concludes that something flows from roses (*erosis aliquid effluere*) which stings the nose (in his case exceptionally sensitive) and by means of tiny prickles produces a solution of continuity imperceptible to the sight (*aculeis quibusdam solutionem continui etsi non sensibus obviam excitat*). This observer, therefore, came very near the mark as to the real cause of the disease, to which he applied the term *coryza a rosarum odore*.

An extraordinary case is related by Herlinus² (on the authority of Adrian Spigelius, whose names still survives in one of the lobes of the liver) of a Roman cardinal, Oliver Caraffa, who could not bear the smell of roses. This is confirmed from personal knowledge by another writer,³ who adds that Caraffa was obliged every year to shut himself up during the rose season, guards being stationed at all the gates of his palace to stop any visitor who might be wearing or carrying the dreaded flower. It is, of course, possible that in this case the roses may have produced some other affection than rose fever; but, as it is distinctly stated that it was the *smell* to which the cardinal objected, we may, I think, fairly conclude that the "sting of the flesh" which tormented him was, in fact, rose-pollen.

About the end of the seventeenth century, Riedlin⁴ records the case of a merchant of his acquaintance who was afflicted with sneezing and catarrh every year when the roses were in bloom. Riedlin advised him to avoid the *cause* of his complaint, and modern science can suggest nothing better.

The case related by Hünerswolff⁵ of a man in whom the perfume

¹ "Atrium Medicinæ Helvetiorum," obs. 92, p. 15 *et seq.* Geneva, 1691.

² "De Remediis sudoriferis et analepticis," p. 32. Lipsiæ, 1693.

³ Joh. Pierius: "Hieroglyphica," lib. viii. cap. 25, p. 96. Francofurti, 1678.

⁴ "Lineæ Medicæ," p. 177. Augustæ Vindelicorum, 1695.

⁵ "Ephem. Nat. Curios.," dec. ii. ann. v. obs. xxii.

of roses invariably produced an attack of coryza, has been often cited by modern writers. The celebrated Broussais¹ appears to have been impeded in his botanical studies by a similar idiosyncrasy.

The occasional influence of imagination in the production of hay fever has been referred to in dealing with that complaint, and a very remarkable case of rose cold has been reported by Dr. J. N. Mackenzie.²

I have myself met with only one example of rose cold. The case was that of Mrs. N——, a lady, aged forty-two, living in Devonshire, who consulted me in 1864. She was very fond of roses, and had a large quantity in her garden. She had never found any inconvenience until three years previously, when she noticed that whenever she smelt a rose she was attacked with severe sneezing, suffusion of the eyes, and headache, which lasted for some hours. After that, as far as possible, she kept roses at a distance, never had any cut or put into her rooms, and, as she said, “was able to walk about the garden without being affected by the odour.” The following year, however, she found that even in her garden, when the roses were in blossom, she was attacked by sneezing and running at the nose and eyes. She tried various remedies, but nothing gave her any relief. In 1864, after having suffered from the complaint for several weeks, she came up to town and consulted me. She was still suffering from nasal catarrh, but there seemed to be nothing the matter with her nose beyond severe congestion of the lining membrane, and a slight swelling of the turbinated bodies. I found Mrs. N—— of a decidedly nervous temperament, and, though well nourished, rather weak. Her general health, however, was good, and she was not at all subject to colds in the winter. She had not suffered from any illness since childhood, when she had the usual infantile complaints.

I recommended a nasal wash containing a little alum, and the patient rapidly got better; but I believe she would have done equally well without any treatment, as she always improved when she escaped from her roses. Mrs. N—— returned home, had a bad attack, and then came back to London. After this I tried several remedies, both mechanical and medicinal, but they were only very partially successful, and this lady was obliged to banish roses altogether from her garden.

¹ Anglada : “Du coryza simple,” p. 14. Thèse de Paris, 1837.

² See further on, p. 94.

As the term rose cold still survives in America, though it is quite unknown in England, I published two or three years ago some of the historical examples which have been related in this article,¹ and invited American physicians to send me any cases which had come under their own notice. The following typical instances have been selected out of a considerable number sent to me for publication :—

AMERICAN CASES.

No. 1.—*Report by the* REV. ANDREW PRESTON PEABODY, D.D., LL.D., *kindly forwarded by* DR. FARNHAM, *Cambridge, Mass., October 2, 1884.*

“IN my childhood and youth I was subject to what are called bad colds in the summer; but I had never heard of the rose cold, and cannot therefore identify those colds with the rose season. It may have been in 1833, perhaps as late as—no later than—1836, that I learned that there was such a disease as the rose cold. At that time there was very little culture of roses out of season. With me the cold commenced with the earliest blossoming of the small red rose, which was the first to make its appearance, and lasted through the rose season, leaving me in my usual health about the time that many of my friends began to suffer from what they called the hay cold (which, however, did not begin till the hay harvest was almost over). During this season (the rose season) there was great swelling of the nostrils and face, an oppressive sense of fullness in the head, an inflamed condition of the eyes, with frequent paroxysms of sneezing, and a discharge from the nose which made half a dozen pocket-handkerchiefs a day no more than a normal supply. I found a relief in travelling in roseless regions, and remember once having enjoyed a day or two of entire relief on Cape Cod, to suffer with renewed severity on my landing at Boston. I was affected temporarily by roses out of season. I remember once in mid-winter, in calling on a sick parishioner, being seized with a violent paroxysm on the entrance into the room of the *fiancé* of the patient. My condition was such as to lead to the inquiry how long I had had so severe a cold. My reply was ‘Not five minutes; but I should think, did I not see to the contrary, that I was in a room full of roses.’ The young gentleman disappeared, and returned

¹ “New York Medical Record.” Aug. 30, 1884.

instantly with a huge bouquet of roses which, he said, finding that there was some one not of the family in the chamber, he had left in the adjoining room. Both in and out of the rose season, I repeatedly had roses removed from churches where I preached, and I always detected their presence before I saw them.

“The decline, and almost disappearance, of the disease in my case seem to me as remarkable as its existence. Since I came to Cambridge, in 1860, I have not suffered severely from it, though up to that time it had relaxed nothing of its severity. For the first few years of my residence here, roses were slightly annoying, and during the rose season proper I suffered more than at other times from dust and cinders in the railway-cars, and from the light through slatted blinds; but I now know no difference of seasons as to general health and comfort. A slight titillation of the nostrils certifies me of the beginning of the rose season; but, though habit makes me shy of handling roses, I do not suffer from having them about me whether within doors or out of doors. It seems to me that a change in my constitution can hardly have taken place so suddenly; but there was a great change in my habits of life. While I was a parish minister I had no vacations, and the commencement of summer found me wearied with my year’s work and incapable of opposing the *vis medicatrix* of nature to any morbid influence. Here in Cambridge, before the written examination system was fully organised, there was a slackening of work towards the close of the term, and the near prospect of vacation made what work remained seem light. My theory is, that successive summers finding me in a better condition to encounter what had been my bane, there has been a gradual improvement of my constitution, and probably an alterative process to such a degree that precisely the same causes would not now produce the same effect.

“If this statement can be of service to you, I am most happy to place it at your command.”

No. 2.—*Extract from a Letter from DR. ANDREWS, of Detroit, U.S.A., November 10, 1884.*

“Mrs. A——, *æt.* 45, blonde, height 5 feet 5 inches, weight 130 lb., of nervous temperament, a delicate but healthy person in every way; very rarely takes cold or has any bronchial affection; only has nasal catarrh in connection with the rose cold.

"First noticed the peculiar susceptibility about fifteen years since, and then by accident. Undoubtedly she had been affected before, but had not connected the cause and effect. When once attention was called to the subject, found that the slightest exposure to rose perfume would bring on the symptoms; a single rose in a large room being sufficient to produce slight disturbance, which would soon pass off upon removal of the cause of irritation. Not only the fresh flowers, but the dried petals and also the attar, are obnoxious, thus proving that in this case, at least, pollen is not the exciting agent. The season of the year has no apparent influence; the presence of rose perfume at any time, and anywhere, is as sure to excite the catarrh as a spark is to explode gunpowder.

"The perfume of violets, pansies, heliotrope, and tube rose have in a less degree the same effect, and very possibly other flowers. She is not at all subject to hay fever.

"Two brothers have hay fever slightly, but not rose cold; one sister and the mother feel the effect of perfumes somewhat; three other sisters are exempt."

No. 3.—*Extract from a letter from* DR. E. SEALY, *Newark, N.J.,*
August 30, 1884.

"ON the evening of June 2 of this year, I sat in my office reading, when a friend entered with a bouquet of beautiful roses which he had gathered from his garden, to present to me. The roses were freshly gathered and exquisitely fragrant. I held them in my hands for about half an hour, and at intervals of a few minutes buried my nose among them and fairly revelled in their perfume, and then laid them aside. About three quarters of an hour afterwards I experienced a sudden rise of fever, with a sense of great heat in the head, and soon after noticed a feeling of dryness in the nostrils. Next morning I had a well-developed coryza, which continued several days.

"I had never been a believer in rose cold, and had never thought the subject worthy of study; but the onset of this attack was so abruptly marked, and so closely related to the supposed cause, that my attention was very forcibly attracted. Even now I do not accept this as demonstrative evidence, but my former prejudices are shaken up, and I am on the alert for further facts."

No. 4.—*Extract from a letter from DR. BOWIE, San Francisco, September 19, 1884.*

“Miss R——, a young lady of nineteen years, is in the habit of visiting our country seat, where thousands upon thousands of roses grow. If she approaches the beds, an irresistible desire to sneeze comes over her. Should she pin a bunch of buds upon her breast, she not only sneezes, but has all the symptoms of a cold in the head—snuffling headache, a feeling as though her nose was stopped up, and a slight watery discharge.

“As an illustration of the truth of these things, I have examined her beforehand, and found everything perfect; and, upon allowing her to smell roses, have noticed all the conditions above, the mucous membrane becoming redder and appearing as though slightly swelled.”

GERMAN CASES.

DR. ZIEM, of Dantzig, has met with two cases of rose cold,¹ one of which he has described in detail. The patient was a healthy man, aged twenty-eight, who consulted Dr. Ziem in Hamburg, at the end of June, 1883, on account of swelling of the eyelids, which was often so severe that he was scarcely able to open his eyes. The tumefaction, which gave rise to a disagreeable pressure on the eyes themselves, was seen to be due to œdema. On examining the nose, the turbinated bodies were found to be much swollen. The patient complained of a mucous secretion from the nose and pharynx, which he had suffered from for many years, and which originally came on in the month of June, soon after he had become assistant at a florist's, and recurring every year in the month, lasted till the end of the autumn. He attributed the complaint to the inhalation of rose dust, and stated that he was always free from attacks in the winter and spring. Dr. Ziem treated the patient with electric cautery, but after applications had been used for six weeks, erysipelatous swelling of the face took place, which made it necessary to discontinue the treatment. The patient went into the country, and whilst there was entirely free from his trouble.

The master of the shop also suffered from severe cold in the head during the rose season, and for that reason never went near his business at that time of year.

¹ “*Monatschrift für Ohrenheilkunde, sowie für Nasen-Rachen-Kehlkopf und Luftrohren-Krankheiten*,” No. 6, 1885.

*The following has been reported as A CASE OF ARTIFICIAL ROSE COLD, by DR. J. N. MACKENZIE, of Baltimore. It is, unfortunately, complicated by the fact of a number of other causes giving rise to the cold in addition to the artificial rose.*¹

The patient was a stout lady, aged thirty-two, well nourished but physically weak, and of nervous temperament. She had been subject to sick headache and neuralgia since she was grown up, and from infancy had suffered repeatedly from coryza of unusual severity. Most of the members of her family were of nervous temperament; her aunt suffered from asthma, and her sister from periodic influenza.

The patient began to suffer from her present trouble when she was between six and eight years of age. The asthmatic feature of the case developed subsequently, the first attack appearing at the age of twelve, and since then the disease had been growing progressively worse. Dr. J. N. Mackenzie observes as follows:—"The clinical history of this case is typical. About the latter part of May, or the first of June, the disease commenced as a coryza. For several days prior to its onset she suffers from an indefinite sense of general depression, with a disagreeable feeling of heaviness in the head, which she in part attributes to the worry incident to expectation of the attack. The catarrhal symptoms may or may not be preceded by chilly sensations and general *malaise*. Their early or late appearance, seemingly, depends upon the condition of the atmosphere, as regards heat and moisture, and sudden and repeated fluctuations in the thermometer. A thunderstorm invariably brings on an attack, without regard to season. The catarrhal stage commences with profuse watery discharge from the nostrils, increased lachrymation with redness of the conjunctiva, itching of the puncta, and photophobia. To these are soon added œdematous swelling of the lids, chemosis, and disturbances of vision, which prevent the use of the eyes for reading, sewing, and the like. The nostrils become at once obstructed, the nose itches violently, and paroxysms of sneezing, lasting sometimes for an hour at a time, occur at frequent intervals. The exterior of the nose becomes intensely red, and toward the close of the stage the cuticle desquamates. There is nearly always present a short, hacking, dry, harassing

¹ "The American Journal of the Medical Sciences," January, 1886.

cough, which is relieved by sternutation. With the obstruction of the nostrils, the severity of the symptoms is increased; there is an annoying tickling sensation in the throat, which the patient feels 'she must tear out with her nails;' the voice becomes husky, nasal, and easily fatigued; the pharynx feels dry and full, the ears become 'stopped up,' and not unfrequently tinnitus forms a prominent symptom of the stage."

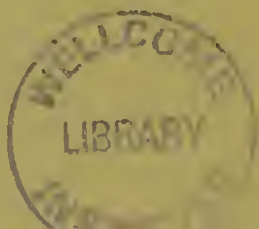
Her physician remarks that "the paroxysms were excited by the following agencies: (1) A heated, sultry condition of the atmosphere; (2) sudden changes in the temperature; (3) dampness; (4) exposure to 'night air;' (5) electrical disturbances of the atmosphere. She can foretell by her sensations the coming of a thunderstorm, and when the latter approaches, the attack is unusually violent, causing her to seek refuge in a closed apartment, when she inhales the fumes of an antispasmodic preparation until the storm is over; (6) exposure to a high wind; (7) sudden excitement; (8) fright; (9) physical overexertion; (10) worry; (11) overloading the stomach; during her disease she has the most voracious appetite, which she is irresistibly compelled to gratify, and in so doing generally brings on a paroxysm; (12) the inhalation of common dust, cinders, and gases, especially those given off in the combustion of coal; (13) the presence or odour of strong perfumes, as, for example, articles of the toilet, the smell of tobacco smoke—anything, in fine, that has a pronounced or penetrating and heavy odour, as the tuberose, lily, &c.; (14) the presence or odour of hay and roses is especially active in exciting the attack. She cannot, for example, remain in a room where roses are kept, or wear them upon her person, without being seized with a violent paroxysm; nor can she come into close or remote contact with hay without the production of a similar result. Last summer, while on a visit to the country, she caught sight of a distant hayfield, when she was immediately seized with a coryza; and on several occasions while passing a haycart in the thoroughfares of the city was taken with an attack of asthma; (15) almost any stimulant, taken internally, such as brandy, whisky, beer, &c.; (16) handling peaches; (17) the ingestion of fruit, quinia, and morphia."

"The anterior segment of the nasal fossa" was highly sensitive, and the right inferior turbinated body was enormously hypertrophied. Dr. J. N. Mackenzie treated his patient with nerve-tonics, and used a soothing spray, whilst to the "most sensitive spots" in

the nose, galvanic cautery was applied. The patient derived great benefit from the treatment, and in a fortnight considered that she had obtained permanent relief. The lady, however, still felt that if brought into contact with hay or roses she would have an attack, and therefore rigidly excluded the latter from her home. The doctor, who was sceptical as to the power of pollen to produce the paroxysm, after applying electric cautery, and when the patient had recovered from the immediate effects of this little operation, allowed the lady to see an artificial rose, which had previously been concealed. In a few minutes a severe attack of coryza came on, and was so severe that the doctor thought it advisable to hand the lady the artificial flower. A few days later the lady called again, "and on that occasion she buried her nostrils in a large fragrant specimen of the genuine article, and inhaled its pollen without the slightest tendency to the production of reflex acts."

This case is a very interesting one, and testifies to the skill of the physician who reported it. But I can scarcely accept it as a typical example of rose cold. I should consider *a typical case one in which the symptoms were produced by roses, and by no other cause.*

Here seventeen causes are given, and under many of these seventeen it will be seen that a great many separate sources of the disease are included. Instead of seventeen, seventy might be made out, or perhaps seventy times seven. In fact, the case is one of a highly nervous person in whom an enormous variety of causes, both physical and mental, were capable of bringing on an attack of coryza. It would be interesting to know whether the cure has remained permanent, and whether it included invulnerability to the other causes (besides rose-pollen) of the complaint.



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